numbers asked to describe or demonstrate SSS, the confidence intervals are relatively wide, and hence the results less certain.

4.4.4 AVAILABILITY OF MATERIALS

Only 13.5% of all households had at least 1 ORS packet and all items required for mixing (container for mixing, spoon, clean water), whereas 84.2% of all households owned all the items necessary to make SSS (sugar, salt, container, spoon, clean water). Slightly fewer households possessed sugar than possessed a spoon, so this figure (84.2%) would not change appreciably if the pinch and scoop method was recommended instead of home teaspoon.

Three quarters of all ORS packets in the home came from the BHU, and just under 1 quarter from a medical store or bazar. Only 8 households were supplied with packets by private doctors (0.2% of all households), 4 by hospitals, 4 by CHWs and none by FHWs. However private doctors supplied a much higher proportion of ORS packets actually used to treat cases than did medical stores or bazaars (see table 1, section 4.5).

The names of ORS packets found are given in annex 12. The commonest was Orasal-F (40.2% of all packets found) followed by Rehydrate (14.3%). All packets found required 1 liter of water for preparation, except Nimkol (3.1%), which required 1/2 liter. The names in annex 12 are listed exactly as the surveyor recorded them. Some names may be different spellings or other duplications of the same product, since the list has not been checked against those known to be available in the province.

5. DISCUSSION

5.1 OTHER SURVEYS

The present survey continues a series that have been performed by UNHCR and CDC amongst children under 5 years of age in the 3 provinces of Pakistan where most Afghan Refugees are living. All the previous surveys have measured overall mortality rates and, briefly, diarrhoea morbidity and mortality (see table 2 for comparision of results). This one is the first to use the household survey method published by WHO (ref 3), and hence the first to measure diarrhoea morbidity and mortality in detail and the first to document treatment practices which includes case management and knowledge about treatment. Since 1981 at least 276 surveys using this WHO methodology have been conducted in 60 countries (see table 3 for results of these surveys compiled by region).

5.2 DIARRHOEA MORBIDITY

The annual diarrhoea incidence (seasonally adjusted) found in this study was almost 5 episodes per child per year. This is higher than the global level (3.3) and the level for this region (2.7, see table 3) but is less than that found in Baluichistan in 1989 (12.6 episodes per child per year).

The proportion of children under 5 years of age commencing diarrhoea in the preceding 2 weeks (21%, the 2 week diarrhoea incidence rate) was about half that found in Baluchistan and smaller than found in any previous survey for NWFP (see table 2). Incidence rate for children <1 year is also much less than in 1984. Whilst this may represent an encouraging trend and indicate more successful preventive interventions, previous surveys appeared to measure prevalence (which is easier for mothers to recall), and incidence may be lower by definition. When 2 week diarrhoea incidence was compared between under 1 year old and 1-4 year old children it was higher in the former (not significant). However the proportion of cases under 1 year (28.0%) was significantly higher than the proportion of children under 1 year (23.7%).

The average duration of a diarrhoea episode (9.2 days) was similar to Baluchistan (8.4 days) suggesting that clinical definitions of diarrhoea were comparable. However, in Baluchistan, although the CDD programmes are similar to those in NWFP, diarrhoea incidence and also diarrhoea-associated mortality are considerably worse, presumably due to the very much scarcer availability of water.

5.3 MORTALITY

The overall (all causes) under 5 years mortality rate (U5MR), 22 per 1000 children <5 years of age, has decreased steadily with each successive survey, and is now not very much higher than the median for the region (15.0/1000 children <5 years, see table 3). It remains higher in Baluchistan (69.8 per 1000). The <1 year and 1-4 year mortality rates have similarly decreased since 1984. The denominator in these rate calculations has been the number of living children found by the survey, but more strictly the mid year population should be used. UNICEF calculates the U5MR using the number of live births as denominator (ref.4); using this method in the present survey gives a rate of 93/1000 live births which is very much lower than the figure quoted in Ref. 4 for Afghanistan (304/1000 live births, the highest in the world) or for Pakistan (169/1000 live births).

The diarrhoea-associated mortality rate for all children <5 years has changed little since the last CDC survey in 1986, although it is less than half of the rates in 1984 & 1985 and is

about one quarter of the rate in Baluchistan (see table 2). However in children aged <1 year this rate, and the proportion of deaths in this age group associated with diarrhoea, has risen markedly since 1986. This suggests that as well as diarrhoea deaths rising in this age group, deaths from other causes have fallen or remained static. The proportion of all diarrhoea-associated deaths that occurred in children <1 year has also risen and this is not due to a rise in the proportion of all children <1 year in the total <5 year population (see table 2, lines 19 & 20). (It should be noted that confidence intervals for these results from previous surveys were not available when this report was being prepared; hence it is not possible to state whether the differences are significant).

These results suggest that although diarrhoea incidence and mortality are decreasing in children aged 1-4 years, and incidence is falling in children <1 year, diarrhoea mortality is actually rising, both relatively and absolutely in children <1 year. Presumably measures that increase prevention of diarrhoea such as better sanitation and water supply and improved personal hygiene are beginning to have an impact in the refugee health programme, but measures such as early management of diarrhoea with increased fluids and ORT, that prevent the serious consequences of diarrhoea, dehydration and death, especially in children <1 year, are not. It appears that this group of children has been neglected in the management of this disease. They should now be targeted for interventions that prevent diarrhoea and prevent and treat dehydration which is the main cause of mortality.

5.4 TREATMENT PRACTICES

Questions on feeding during diarrhoea showed that breast feeding was almost never stopped. However a significant proportion (37.1%) failed to increase fluids of any sort; 30.4% stopped or decreased solid foods. The goal should be to teach all mothers to increase fluid intake and to continue feeding during and after diarrhoea, since early feeding promotes fluid and electrolyte absorption and helps to prevent or break the vicious cycle of malnutrition and diarrhoea. This accords with the recently propagated prime messages for CDD (ref.6 and annex 13).

The high rate of prescription of other medicines, mainly expensive syrups, highlights the refugees' known fondness for pharmaceutical preparations. These are rarely necessary for the treatment of diarrhoea. This result also indicates a need for education and training in diarrhoea management amongst health personnel (including private doctors and in medical stores) and for promotion to parents of health education prime messages on diarrhoea, one of which states that "medicines other than ORS should not be used for diarrhoea except on medical advice." It

would have been useful to obtain accurate information about the source of the preparations, in order to target these interventions more effectively.

A surprisingly high proportion of mothers claimed to have heard of ORS (95% of all households), but this was offset by the very much smaller number who could describe or demonstrate its preparation correctly. The errors were mainly those of incorrect volume of water and incorrect amount of ORS. A particularly common error was for the mother to use 1/2 packet ORS with 1/2 volume of water (this was recorded as incorrect since it is difficult to measure half the contents of a packet). Mothers said they did this because the packets were expensive, or they had no adequate storage for the solution (e.g. a refrigerator) and a liter may not be necessary in a short period for an infant.Some parents might prefer 1/2 liter packets but the only example found was "Nimkol" which comprised 3.1% of all packets found (see annex 12). One liter packets are the only ones currently endorsed by the Government of Pakistan and WHO.

Another difficulty in the survey may have arisen from too narrow a margin for the correct volume of fluid being used, which may have overestimated the frequency of incorrect volumes.

Households that had heard of SSS were much rarer than those that heard of ORS, and significantly fewer could prepare SSS correctly. Knowledge of SSS preparation was somewhat higher in Baluchistan (16.5% correct compared to 5.3%); this presumably reflects the standard policy there to promote SSS.

The 2 commonest methods of SSS preparation in use, home teaspoon and pinch and scoop, have both been shown to be inaccurate; other surveys have shown that although the pinch and scoop method is more unreliable, the home teaspoon method is harder to remember (Ref.6). The double ended TALC plastic spoon is probably most accurate but was very rarely found in this survey.

A much larger proportion of households owned everything for SSS (84.2%) than for ORSS (13.5%). Conversely, knowledge and ability to prepare SSS was much lower than ORS. This was also true, to a lesser extent, in Baluchistan, where there was a greater availability of SSS and ORSS constituents (92.7% and 75.2% respectively).

Slightly less than one quarter of cases were treated appropriately with oral rehydration therapy (ORT); this is similar to Baluchistan although there the proportion given SSS there was slightly higher, again probably reflecting the Baluchistan policy to promote a home based fluid (SSS). Even so, SSS treatment rates were very low in both provinces. The ORS treatment rate in the CDC survey of 1984 was substantially higher (53%) than the present figure (21%) - see table 2. The current figures for ORT use are very low and show that a major effort is needed

to educate parents and promote the use of this life saving therapy. One reason for low ORT use may be the parents perception that it does not treat diarrhoea, because stool purging rates are not reduced (unlike anti-diarrhoeal medications or food-based ORS). In addition ORS is not seen as a treatment for a severely dehydrated child since parents are much more likely to take such a child to a private doctor than a BHU, where ORS packets are more commonly prescribed. The low choice of hospital for a seriously ill child may point more to the scarcity of hospitals than a lack of confidence in their abilities.

Acceptability and utilization of the BHU system for mamagement of children with diarrhoea needs to be increased. Strategies for this include improving coverage of the population by BHUs/SHUs, and raising performance of BHU staff. Treatment of diarrhoea dehydration should be targeted through the BHU where prescription of ORS packets and education in the use of ORSS should occur. Already some of these activities occur in BHUs/SHUs but medical stores in bazaars, and private doctors should also be involved since appreciable numbers obtain ORS packets and knowledge from them.

The BHU-integrated CHW programme should continue to be extended and should emphasise health education for prevention of diarrhoea, and early management of diarrhoea in the home and referral of dehydrated cases. This includes correct personal hygiene at all times, the importance of exclusive breast feeding (ref.9), and increasing food and fluid intake from the onset of diarrhoea. Organisations involved in training and supervising CHSs and CHWs have observed that they have great difficulty in passing on knowledge of SSS preparation to mothers, and much of what is passed on is recalled wrongly. These observations are confirmed by this survey. It appears that the promotion of SSS in the home has so far failed; this conclusionhas also been reached in surveys on SSS in other countries (ref.8). The rate of use and accuracy of preparation of SSS are so poor that serious consideration should be given to deleting its promotion from the programme.

6. CONCLUSIONS AND RECOMMENDATIONS

1. Diarrhoea incidence in all Afghan Refugee children <5 years of age in NWFP is high but is decreasing.

2. The all causes <5 year mortality rate (U5MR) is also falling, but the diarrhoea-associated mortality rate for children <5 years of age is static and for children <1 year the diarrhoea-associated mortality rate is rising.

3. Interventions to prevent diarrhoea and treat the serious consequences of diarrhoea should be particularly targeted to the <1 year age group.

4. Only 57% of mothers gave the same or increased food to children with diarrhoea and only [illegible]4% gave increased fluids. The prime messages to give extra fluids and food and continue breast feeding during diarrhoea, and give extra food after it, should be strongly promoted. Also, mothers should give only breast milk during the first 4-6 months of life and continue breast feeding beyond the age of 12 months.

5. The treatment rate with medicines for diarrhoea (other than ORT) is far too high in the ARHP. A programme is required for education and training in diarrhoea management amongst health personnel (including private doctors and in medical stores).

6. Less than one quarter of diarrhoea cases are treated appropriately with ORT (ORS or SSS). Mothers' knowledge of ORS preparation is low and of SSS preparation extremely low, although 84% of households own everything to make SSS. A major initiative is required to promote the value and use of ORT amongst parents and health staff, but the discontinuation of the promotion of SSS in the home should be seriously considered. Early referral of dehydrated cases to the BHU should be encouraged. This initiative could be partly implemented through the CHW/FHW programme.

7. The health education prime messages on diarrhoea should be actively propagated through all available channels at the same time and integrated with the initiative on ORT.

8. There is an urgent need to formulate and then implement a standard policy for NWFP on prevention and management of diarrhoea in the home, and treatment of diarrhoea in the BHU and other health facilities.

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TABLE 1: DIARRHOEA MORBIDITY, MORTALITY AND TREATMENT PRACTICES — TABLE 1

RESULTS OF A HOUSEHOLD SURVEY AMONGST AFGHAN REFUGEES CONDUCTED BY UNHCR SURVEY TEAM IN NORTH-WEST FRONTIER PROVINCE, PAKISTAN FROM JANUARY - JULY, 1989.

SAMPLE: 5755 children <5 years of age (1365 <1y, 4388 1-4y, 2 age group n/a) from 3332 households randomly selected from throughout the province.

METHODOLOGY: Modified from W.H.O. Household Survey Manual CDD/SER/86.2

1	DIARRHOEA MORBIDITY			
1.1	2-week diar.incidence rate (<5y):	21.0%	(18.4-23.6)	of children <5y began diarrhoea in past 2 weeks.
1.2	2-week diar.incidence rate (1-4y):	19.8%	(17.2-22.5)	of children 1-4y began diarrhoea in past 2 weeks.
1.3	2-week diar.incidence rate (<1y):	24.8%	(21.3-28.2)	of children <1y began diarrhoea in past 2 weeks.
1.4	Average duration of a diar.episode:	9.2	(8.7-9.7)	days.
1.5	Annual diarrhoea incidence (<5y):	4.7	(4.2-5.3)	episodes per child <5y per year.
1.6	Annual diarrhoea incidence (1-4y):	4.5	(3.9-5.1)	episodes per child 1-4y per year.
1.7	Annual diarrhoea incidence (<1y):	5.5	(4.8-6.3)	episodes per child <1y per year.
1.8	Proportion of children <1y:	23.7%	(22.7-24.8)	of all children <5y.
1.9	Proportion of cases <1y:	28.0%	(25.6-30.3)	of all cases.
2	DIARRHOEA POINT PREVALENCE	16.5%	(14.4-18.5)	of children had diarrhoea on day of survey.
3	MORTALITY RATES			
3.1	OVERALL MORTALITY			
3.1.1	<5y mortality rate (/population):	22	(18-26)	deaths per 1000 children <5y.
3.1.2	<5y mortality rate (/live births):	93	(75-111)	deaths per 1000 live births.
3.1.3	1-4y mortality rate:	6	(4-9)	deaths per 1000 children 1-4y.
3.1.4	Under 1y mortality rate:	73	(59-87)	deaths per 1000 children <1y.
3.1.5	Infant mortality rate	73	(60-86)	deaths per 1000 live births.
3.2	DIARRHOEA-ASSOCIATED MORTALITY			
3.2.1	<5y d-a mortality rate:	9	(6-12)	deaths per 1000 children <5y.
3.2.2	1-4y d-a mortality rate:	3	(2-4)	deaths per 1000 children 1-4y.
3.2.3	<1y d-a mortality rate:	28	(17-38)	deaths per 1000 children <1y.
3.3	PROPORTION OF DEATHS ASSOCIATED WITH DIARRHOEA			
3.3.1	Under 5y deaths:	39.8%	(29.1-50.6)	of deaths in children <5y.
3.3.2	1-4y deaths:	46.4%	(25.9-67.0)	of deaths in children 1-4y.
3.3.3	Under 1y deaths:	38.0%	(25.6-50.4)	of deaths in children <1y.
3.3.4	Proportion of all d-a deaths occurring in children <1 year:	74.5%	(65.2-83.8)	of all diar.-assoc. deaths.

4 DIARRHOEA CASE MANAGEMENT

4.1	BREAST FEEDING		
4.1.1	Cases breast feeding before onset of diarrhoea:	55.4% (52.2-58.6)	of all cases.
4.1.2	Cases that continued breast feeding during diarrhoea:	98.8% (97.9-99.7)	of cases already breastfeeding.
4.1.3	Cases that discontinued breast feeding during diarrhoea:	1.0% (0.1-1.9)	of cases already breastfeeding.
4.2	CHANGE IN SOLID FOODS DURING DIARRHOEA		
4.2.1	Stopped:	13.4% (10.5-16.3)	of all cases.
4.2.2	Decreased:	17.0% (14.3-19.6)	of all cases.
4.2.3	Unchanged:	49.1% (44.8-53.5)	of all cases.
4.2.4	Increased:	7.4% (5.8-9.0)	of all cases.
4.3	CHANGE IN FLUIDS DURING DIARRHOEA		
4.3.1	Stopped:	2.1% (1.3-2.8)	of all cases.
4.3.2	Decreased:	5.5% (3.7-7.4)	of all cases.
4.3.3	Unchanged:	29.5% (21.6-37.5)	of all cases.
4.3.4	Increased:	54.4% (45.2-63.6)	of all cases.
4.4	TREATMENT WITH ORAL FLUIDS		
4.4.1	Treatment with ORSS:	21.2% (16.0-26.4)	of all cases.
4.4.2	Treatment with SSS:	3.1% (1.3-5.0)	of all cases.
4.4.3	Treatment with TLF:	9.6% (6.8-12.4)	of all cases.
4.4.4	Treatment with another fluid:	48.1% (38.8-57.5)	of all cases.
4.5	SOURCE OF ORS PACKET USED FOR TREATMENT		
4.5.1	CHW:	1.2% (-0.5-2.8)	of children given ORS.
4.5.2	FHW:	0.0%	of children given ORS.
4.5.3	Malik:	0.0%	of children given ORS.
4.5.4	BHU:	70.3% (59.7-81.0)	of children given ORS.
4.5.5	Bazaar or medical store:	6.3% (1.4-11.1)	of children given ORS.
4.5.6	Private doctor:	14.8% (7.0-22.7)	of children given ORS.
4.5.7	Hospital:	0.4% (-0.4-1.2)	of children given ORS.
4.5.8	Another source:	0.0%	of children given ORS.
4.5.9	Not known:	0.0%	of children given ORS.
4.6	SOURCE OF KNOWLEDGE OF TREATMENT WITH ORAL REHYDRATION SALTS SOLUTION (ORSS)		
4.6.1	CHW (male community health worker)	2.0% (-0.8-4.7)	of children given ORS.
4.6.2	FHW (female health worker)	0.0%	of children given ORS.
4.6.3	Malik:	0.0%	of children given ORS.
4.6.4	BHU (Basic Health Unit):	76.2% (67.8-84.6)	of children given ORS.
4.6.5	Bazaar or medical store:	2.0% (0.5-4.4)	of children given ORS.
4.6.6	Private doctor:	18.0% (9.1-26.9)	of children given ORS.
4.6.7	Hospital:	0.8% (-0.8-2.3)	of children given ORS.
4.6.8	Another source:	0.0%	of children given ORS.
4.6.9	Don't know:	0.0%	of children given ORS.

4.7 SOURCE OF KNOWLEDGE OF TREATMENT WITH SUGAR-SALT SOLUTION

4.7.1	CHW (male community health worker)	23.7% (-6.6-54.0)	of children given SSS.
4.7.2	FHW (female health worker)	0.0%	of children given SSS.
4.7.3	Malik:	0.0%	of children given SSS.
4.7.4	BHU:	73.7% (47.7-99.7)	of children given SSS.
4.7.5	Bazaar or medical store:	0.0%	of children given SSS.
4.7.6	Private doctor:	10.5% (-0.4-21.4)	of children given SSS.
4.7.7	Hospital:	0.0%	of children given SSS.
4.7.8	Another source:	0.0%	of children given SSS.
4.7.9	Don't know:	5.3% (-6.1-16.6)	of children given SSS.

4.8 INTRA-VENOUS THERAPY

4.8.1	Given intra-venous therapy:	0.5% (0.1-0.9)	of all cases.
4.8.2	Not given intra-venous therapy:	97.8% (96.8-98.9)	of all cases.

4.8.3 Place given intra-venous therapy: BHU=1, Private Doctor=3, Hospital=2 cases.

4.9 OTHER MEDICINE GIVEN

4.9.1	Proportion given other medicine:	73.2% (68.6-77.8)	of all cases.
4.9.2	Traditional (% of 4.9.1):	0.3% (0.0-0.7)	of cases given other medicine.
4.9.3	Tablets (" "):	30.1% (23.8-36.4)	of cases given other medicine.
4.9.4	Injection (" "):	9.3% (6.8-11.7)	of cases given other medicine.
4.9.5	Syrup (" "):	84.1% (80.3-87.9)	of cases given other medicine.
4.9.6	Drops (" "):	1.2% (0.3-2.2)	of cases given other medicine.
4.9.7	Other (" "):	0.0%	of cases given other medicine.

4.10 WHERE A SERIOUSLY ILL CHILD WOULD BE TAKEN FOR TREATMENT

4.10.1	CHW:	0.0%	of all cases.
4.10.2	FHW:	0.0%	of all cases.
4.10.3	Malik:	0.0%	of all cases.
4.10.4	BHU:	41.4% (34.3-48.5)	of all cases.
4.10.5	Bazaar or medical store:	0.1% (-0.1-0.2)	of all cases.
4.10.6	Private doctor:	69.1% (62.2-76.0)	of all cases.
4.10.7	Hospital:	3.8% (1.4-6.2)	of all cases.
4.10.8	Another place:	0.1% (-0.1-0.2)	of all cases.
4.10.9	Nowhere:	2.3% (0.8-3.8)	of all cases.
4.10.10	Don't know:	0.5% (-0.1-1.1)	of all cases.

5 KNOWLEDGE OF ORAL REHYDRATION SALT SOLUTION (ORSS) PREPARATION

5.1	Proportion of households that heard of ORS:	95.4% (94.0-96.8)	of all households.

5.2 DESCRIPTION OF ORSS PREPARATION

5.2.1	HHs that described ORSS preparation correctly:..........	19.0% (13.2-24.7)	of all households.
5.2.2	Those incorrect that got whole method wrong:............	25.3% (21.1-29.5)	of HHs that got desc. wrong.
5.2.3	Those incorrect that got amount of ORS wrong:...........	40.8% (35.1-46.5)	of HHs that got desc. wrong.
5.2.4	Those incorrect that got volume of water wrong:..........	71.7% (68.2-75.2)	of HHs that got desc. wrong.
5.2.5	Those incorrect that got use of clean water wrong:.......	0.6% (-0.3-1.5)	of HHs that got desc. wrong.
5.2.6	Those incorrect that got something else wrong:..........	0.04% (-0.04-0.1)	of HHs that got desc. wrong.

1. SUMMARY

A WHO household survey of diarrhoea morbidity, mortality and treatment practices was conducted by a UNHCR survey team amongst all Afghan refugee children <5 years of age in North-West Frontier Province, Pakistan between January and July, 1989. Interviews were conducted with the parents of 5883 children randomly distributed in 28 clusters randomly selected from all Afghan refugee villages in NWFP. 5755 children were alive at the time of interview and 21% of these had commenced an episode of diarrhoea during the preceding 2 weeks.

The annual diarrhoea incidence, adjusted for season, for all children <5 years of age was 4.7 episodes per child per year, and slightly higher for children <1 year. The all causes <5 year mortality rate, 22 per 1000 children <5 years per year, was lower than in previous surveys conducted between 1984 and 1987, but the diarrhoea-associated mortality rate was unchanged in children <5 years of age and higher in children <1 year of age. 40% of deaths in children <5 years were associated with diarrhoea, and this proportion is increasing in children <1 year. Diarrhoea incidence and diarrhoea-associated mortality rates were lower than in Afghanistan and Pakistan (indigenous population) but comparable with median rates for the Eastern Mediterranean Region of WHO. The infant mortality rate was 73 per 1000 live births.

Only 57% of children with diarrhoea received increased or unchanged food intake during the episode, and only 54% received increased fluids. 99% continued breast feeding, 21% were given oral rehydration salts (ORS), mainly from the Basic Health Unit (BHU), and 3% were given sugar-salt solution (SSS); 73% were given medicine other than oral rehydration therapy (ORT). Three quarters of parents of cases given SSS obtained their knowledge of it from BHUs and one quarter from Community Health Workers (CHWs).

95% of households had heard of ORS but only 19% could describe it and 13% demonstrate it correctly. The commonest error was an incorrect volume of water. 13% of households possessed an ORS packet and 3/4 of them were obtained from the BHU. Only 23% of households had heard of SSS and only 4% could describe and demonstrate it correctly. The home teaspoon (cup & spoon) was the commonest method in use. An incorrect amount of sugar was the commonest error but mistakes were frequent with all parts of the method. 84% of households possessed all materials and equipment necessary to make SSS.

[Summary continued on page 2]

5.3 DEMONSTRATION OF ORSS PREPARATION

5.3.1	Households that demonstrated ORSS preparation correctly:.....	13.5%	(9.2-17.8)	of all households.
5.3.2	Those incorrect that got whole method wrong:............	2.2%	(-1.2-5.5)	of HHs that got demo.wrong.
5.3.3	Those incorrect that got amount of ORS wrong:...........	12.3%	(6.5-18.2)	of HHs that got demo.wrong.
5.3.4	Those incorrect that got volume of water wrong:.........	100.0%	(93.7-106.3)	of HHs that got demo.wrong.
5.3.5	Those incorrect that got use of clean water wrong:.......	0.7%	(-0.7-2.1)	of HHs that got demo.wrong.
5.3.6	Those incorrect that got something else wrong:..........	0.0%		of HHs that got demo.wrong.

6 KNOWLEDGE OF SUGAR-SALT SOLUTION (SSS) PREPARATION

6.1	Proportion of households that heard of SSS:	23.2%	(16.9-29.6)	of all households.

6.2 METHOD OF SSS PREPARATION USED

6.2.1	Pinch and scoop method:	20.5%	(11.6-29.5)	of HHs that heard of SSS.
6.2.2	Home teaspoon method:	70.3%	(61.3-79.3)	of HHs that heard of SSS.
6.2.3	TALC plastic spoon method:	1.2%	(0.1-2.2)	of HHs that heard of SSS.
6.2.4	Another method:	1.6%	(-0.2-3.3)	of HHs that heard of SSS.

6.3 DESCRIPTION OF SSS PREPARATION

6.3.1	Households that described SSS preparation correctly:......	5.3%	(2.8-7.8)	of all households.
6.3.2	Those incorrect that got whole method wrong:............	7.4%	(4.6-10.2)	of HHs that got desc. wrong.
6.3.3	Those incorrect that got amount of sugar wrong:.........	75.3%	(66.9-83.6)	of HHs that got desc. wrong.
6.3.4	Those incorrect that got amount of salt wrong:..........	34.2%	(18.4-49.9)	of HHs that got desc. wrong.
6.3.5	Those incorrect that got volume of water wrong:.........	59.3%	(48.5-70.0)	of HHs that got desc. wrong.
6.3.6	Those incorrect that got use of clean water wrong:.......	10.3%	(3.8-16.7)	of HHs that got desc. wrong.

6.4 DEMONSTRATION OF SSS PREPARATION

6.4.1	Households that demo'd SSS preparation correctly:......	4.2%	(2.2-6.2)	of all households.
6.4.2	Those incorrect that got whole method wrong:...........	0.0%		of HHs that got demo.wrong.
6.4.3	Those incorrect that got amount of sugar wrong:.........	9.7%	(-3.8-23.2)	of HHs that got demo.wrong.
6.4.4	Those incorrect that got amount of salt wrong:..........	29.0%	(0.8-58.9)	of HHs that got demo.wrong.
6.4.5	Those incorrect that got volume of water wrong:.........	90.3%	(47.9-132.7)	of HHs that got demo.wrong.
6.4.6	Those incorrect that got use of clean water wrong:......	0.0%		of HHs that got demo.wrong.
6.4.7	Those incorrect that got size of container wrong:........	0.0%		of HHs that got demo.wrong.

7 AVAILABILITY OF MATERIALS

7.1 MATERIALS FOR ORS AND SSS

7.1.1	HHs with 1 or >1 ORS packets:	13.5% (11.1-15.9)	of all households.
7.1.2	HHs with sugar:	85.8% (81.8-89.8)	of all households.
7.1.3	HHs with salt:	97.1% (93.9-100.3)	of all households.
7.1.4	HHs with a jug:	96.2% (93.5-98.8)	of all households.
7.1.5	HHs with a spoon:	88.0% (84.3-91.8)	of all households.
7.1.6	HHs with clean water:	95.2% (92.5-97.9)	of all households.
7.1.7	HHs with all for ORS:	13.5% (11.1-15.8)	of all households.
7.1.8	HHs with all for SSS:	84.2% (80.7-87.7)	of all households.

7.2 SOURCE OF ORS PACKETS FOUND

7.2.1	MHW:	0.9% (0.8-2.6)	of all packets.
7.2.2	FHW:	0.0%	of all packets.
7.2.3	Malik:	0.2% (-0.2-0.7)	of all packets.
7.2.4	BHU:	72.5% (64.1-80.8)	of all packets.
7.2.5	Medical store:	23.3% (14.4-32.1)	of all packets.
7.2.6	Private doctor:	1.8% (-0.2-3.8)	of all packets.
7.2.7	Hospital:	0.9% (-0.1-1.9)	of all packets.
7.2.8	Elsewhere:	0.5% (-0.5-1.4)	of all packets.

TABLE 2: Comparison between UNHCR/CDC surveys in NWFP & Baluchistan, 1984-89. TABLE 2

	CDC/UNHCR 1984	CDC/UNHCR 1985	CDC/UNHCR 1986	UNHCR 1987	UNHCR 1988/89	UNHCR 1989
1. Sampling frame:	N,B,P	N,B,P	N,B,P	N	B	
2. Sample size:	2011	2313	2368	7936	5675	5755
3. No. of clusters (NWFP):	28 (21)	29 (22)	30 (23)	45	30	28
4. Time of survey:	april-may	april-may	april-may	sept-dec	oct-feb	jan-july
5. Diarrhoea history:	7 days	7 days	7 days	7 days	14 days	14 days
6. Diar.incidence <5y:	38%	35%	28%	27%	45%	21%
7. Diar.incidence <1y:	46%	-	-	-	-	25%
8. U5MR/1000 pop.<5y:	62	48	30 (27)	24	70	22
9. U5MR/1000 live bths.:	210	177	113 (102)	101	-	93
10. 1-4MR/1000 pop.1-4y:	22	21	11	8	-	6
11. U1MR/1000 pop.<1y	175	134	122	77	-	73
12. IMR/1000 live bths.	155	119 (106)	81 (64)	-	-	73
13. D-A MR <5y/1000 pop.<5y:	24	19	10	6	38	9
14. D-A MR 1-4y/1000 pop.1-4y:	-	-	6	3	-	3
15. D-A MR <1y/1000 pop.<1y:	-	-	22	16	-	28
16. % deaths <5y due to diar.:	39%	39%	34%	26%	54%	40%
17. % deaths 1-4y due to diar.:	-	-	55%	43%	-	46%
18. % deaths <1y due to diar.:	-	-	25%	21%	-	38%
19. % D-A deaths in <1y:	-	-	54%	61%	-	75%
20. % children <1y:	26%	24%	25%	24%	-	24%
21. ORS treatment rate:	53%	-	-	-	15%	21%
22. SSS treatment rate:	-	-	-	-	10%	3%
23. Other meds. rate:	76%	-	-	-	69%	73%

KEY: N = NWFP, B = Baluchistan, P = Punjab.
U5MR = Under 5 year mortality rate
1-4MR = 1-4 years mortality rate
U1MR = Under 1 year mortality rate
IMR = Infant mortality rate
D-A MR = Diarrhoea-associated mortality rate

In 1984, 1985, 1986 surveys, results in ( ) are for NWFP separately.

TABLE 3: Regional comparison of all-causes mortality and diarrhoea-associated mortality and annual diarrhoea incidence in children <5 years of age.

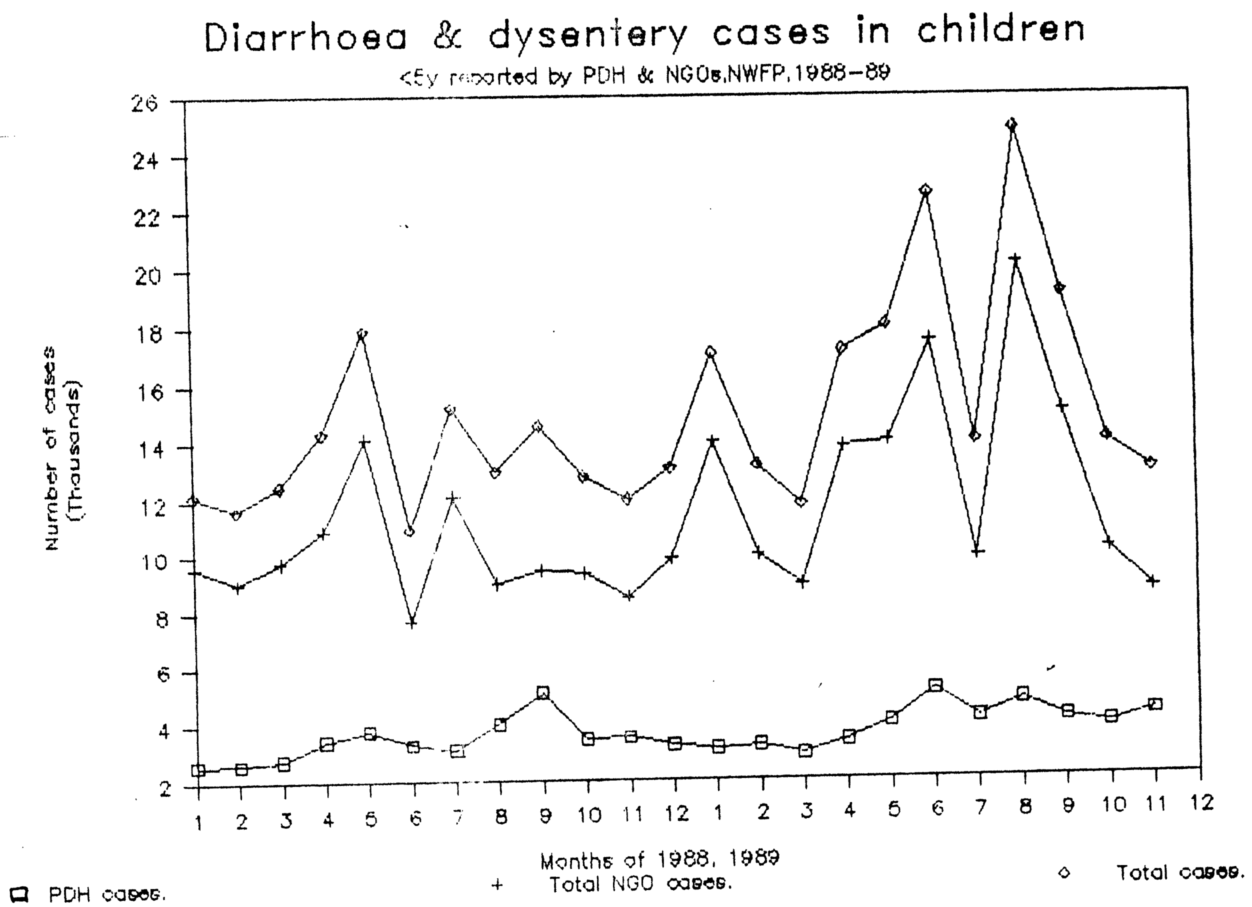
Region	Date of Survey	U5MR/1000 children <5 years		Percentage of deaths diarrhoea-associated	Annual diarrhoea incidence (episodes/ child/year)
		All causes	Diarrhoea-associated		
1. Global	1981-1986	18.8	6.5	35.8%	3.3
2. EMR	1981-1986	15.0	5.8	39.1%	2.7
3. Pakistan	1987	42.6 (169)	-	-	-
4. Afghanistan	1987	102.0 (304)	-	-	-
5. NWFP (ARs)	1989	22 (93)	9	39.8%	4.7

SOURCES:

1,2, & 5: WHO Household surveys (in 1 & 2, results were medians of a number of surveys; 5 is the present survey).

3 & 4: UNICEF "State of the World's Children," 1989.

NWFP (ARs) = North-West Frontier Province (Afghan Refugees)


Diarrhoea & dysentery cases in children
<5y reported by PDH & NGOs,NWFP,1988-89
Number of cases
(Thousands)
26
24
22
20
18
16
14
12
10
8
6
4
2
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12
Months of 1988, 1989
PDH cases.
Total NGO cases.
Total cases.

DETERMINING SAMPLE SIZE FOR AN INITIAL MORTALITY SURVEY

The sample size for an initial mortality survey will depend on:

- the approximate diarrhoea-associated mortality rate you expect to find, and
- the minimum change that you are interested in detecting in the diarrhoea-associated mortality rate by the time of the follow-up survey.

Steps:

1. Estimate the current diarrhoea-associated mortality rate. Use the lowest figure which is likely to be correct.

2. Decide what change in the rate you would be interested in detecting, e.g., a 20% reduction, a 30% reduction.*

3. Refer to the table of sample sizes on the next page. Find the row for the estimated current rate and the column for the required limits of precision. The intersection of this row and column tell you the required sample size.

Example:

1. Previous data suggest that the diarrhoea-associated mortality rate is between 25 and 30 per 1000. You use the lower figure, i.e., 25 per 1000, or 0.025.

2. You are interested in detecting a change of 40% in the rate. This is less than your target of a 50% reduction in diarrhoeal mortality over five years.

3. You look at the table and find the row for 0.025 and the column for 40%. The intersection of the row and column tells you the required sample size, which is 7800 children. You decide that it is practical to do a survey with this sample size given your resources.

Note: In many instances a sample size of >12 000 children will be impractical for economic or logistical reasons. If the required size is impractical given the resources available, do not do a mortality survey. You may wish to consult a statistician to discuss alternative approaches to measure mortality. Go on to the next section and determine the required sample size for a morbidity and treatment survey.

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* The change in the rate which you are interested in detecting may be less than the change which was predicted would occur at the time of setting targets. For example, you may have set a target for a 30% reduction in mortality, but you may be interested in detecting with reasonable confidence a change of only 20%.

REQUIRED SAMPLE SIZES FOR INITIAL MORTALITY SURVEY

Estimated Current Mortality Rate	Minimum Reduction in Mortality Rate to Be Detected (expressed as a percentage of the current rate) 25%	30%	33%	40%	50%
.010	50 700	35 200	29 000	19 800	12 700
.011	46 000	32 000	26 400	18 000	11 500
.012	42 100	29 300	24 200	16 500	10 500
.013	38 900	27 000	22 300	15 200	9 700
.014	36 000	25 000	20 700	14 100	9 000
.015	33 600	23 300	19 300	13 100	8 400
.016	31 500	21 900	18 000	12 300	7 800
.017	29 600	20 500	17 000	11 500	7 400
.018	28 000	19 400	16 000	10 900	6 900
.019	26 400	18 300	15 200	10 300	6 600
.020	25 100	17 400	14 400	9 800	6 200
.025	20 000	13 900	11 400	7 800	5 900
.030	16 500	11 400	9 500	6 400	5 600
.035	14 100	9 800	8 100	5 500	5 400
.040	12 300	8 500	7 000	4 800	5 200
.045	10 800	7 500	6 200	4 200	4 900
.050	9 700	6 700	5 500	3 800	4 700
.055	8 700	6 100	5 000	3 400	4 600
.060	8 000	5 500	4 600	3 100	4 400
.065	7 300	5 100	4 200	2 800	4 200
.070	6 800	4 700	3 900	2 600	4 100
.075	6 300	4 300	3 600	2 400	4 000
.080	5 800	4 000	3 300	2 300	3 800

Process

9. Prepare a list of all communities and their populations in the districts selected. The list should include communities which are not on official lists (new settlements, refugee camps, etc.) as well as villages and towns.

10. Calculate and list the cumulative population with the addition of each community.

11. Determine the sampling interval.

$$\frac{\text{Cumulative total population}}{\text{Number of clusters}^{*}} = \text{Sampling interval}$$

12. Select a random number which is equal to or less than the sampling interval.

13. To identify the community in which Cluster Number 1 is located, find the first community on the list in which the cumulative population equals or exceeds the random number selected in step 12.

14. Identify the community in which the second cluster is located as follows:

Random number	+	Sampling interval	=	Location of second cluster

15. Identify each subsequent community to be visited as follows. Stop when you have identified 30 or more communities, depending on the number of clusters you plan to survey.

Number which identified the location of the previous cluster	+	Sampling interval	=	Next cluster location

* 30 or more clusters will be necessary.

DIARRHOEA SURVEY SAMPLING

ANNEX 3

S.NO.	CAMPS		POPULATION	COMMULATIVE POP.	CLUSTER NO.
1	Ghazi	1	7450	7450	
2	Ghazi	2	10418	17868	1
3	Padhana	1	8817	26685	
4	Padhana	2	9066	35751	
5	Padhana	3	8458	44209	
6	Panian	1	7060	51269	
7	Panian	2	7397	58666	
8	Panian	3	7199	65865	
9	Panian	4	6566	72431	
10	Panian	5	7350	79781	
11	Panian	6	7543	87324	
12	Panian	7	12008	99332	1
13	Panian	8	7274	106606	
14	Bassu Mera	1	7645	114251	
15	Bassu Mera	2	10089	124340	
16	Panian	1	5600	129940	
17	Panian	2	288	130228	
18	Panian	3	7240	137468	
19	Bizen Khel		8384	145852	
20	Kurram Garhi		9239	155091	
21	B.Khel		13587	168678	1
22	Saidgi		13419	182097	
23	Naurang		9200	191297	
24	G.K.Khel		8182	199479	
25	Gambila		12277	211756	
26	Kalakatak		13554	225310	
27	Naurang		7922	233232	
28	Shidi		17894	251126	1
29	Barawal		8509	259635	
30	Barari		7599	267234	
31	Chakdara		11703	278937	
32	Doaba		4197	283134	
33	Kotkay		5427	288561	
34	Mayar		10482	299043	
35	Timer	1	13694	312737	
36	Toor	1	9395	322132	
37	Toor	2	8999	331131	1
38	Toor	3	9673	340804	
39	Tank	1	6113	346917	
40	Tank	2	5164	352081	
41	Tank	3	15157	367238	
42	Kurri		12490	379728	
43	Raghzandani		3607	383335	
44	Navila		3831	387166	
45	Daraban		6595	393761	
46	Ratta Kulachi		9287	403048	
47	Pusha Pul		8075	411123	1
48	Girsal		9943	421066	
49	Dabara		7757	428823	
50	Gamkol	1	6888	435711	
51	Gamkol	2	13409	449120	
52	Gamkol	3	14377	463497	
53	Oblen		14426	477923	
54	Jemra		10867	488790	1
55	Chichana		11737	500527	

S.NO.	CAMPS		POPULATION	COMMULATIVE POP.	CLUSTER NO.
56	G, Banda		8140	508667	
57	Shindand		4172	512839	
58	Katakanri		6771	519610	
59	Lakhtanbanda		15393	535003	
60	Kotki		10890	545893	
61	Kahi	1	15344	561237	
62	Kahi	2	15567	576804	1
63	Doaba		14313	591117	
64	Darsamand	1	22370	613487	
65	Darsamand	2	16303	629790	
66	Tahall	1	13914	643704	1
67	Tahall	2	17498	661202	
68	Shaikhabad		7189	668391	
69	Barary		9689	678080	
70	Hajiabad		6800	684880	
71	Kutlian		6598	691478	
72	Khabi		10568	702046	
73	Herimera		8852	710898	
74	Rata Deput		7667	718565	
75	Neelore		7555	726120	1
76	Iehrian		6991	733111	
77	Baghicha	1	5632	738743	
78	Baghicha	2	4771	743514	
79	Baraki	1	4070	747584	
80	Baraki	2	4545	752129	
81	Baraki	3	5160	757289	
82	Baraki	4	4978	762267	
83	Baraki	5	6060	768327	
84	Barki	6	5609	773936	
85	Baraki	7	5625	779561	
86	Baraki	8	5149	784710	
87	Baraki	9	5256	789966	
88	Baraki	10	6188	796154	
89	Fazal Camp	1	5152	801306	1
90	Fazal Camp	2	8770	810076	
91	Gandaf		8318	818394	
92	Jalala	1	9757	828151	
93	Jalala	2	11938	840089	
94	Badaber	1	9553	849642	
95	Badaber	2	9062	858704	
96	Badaber	3	7352	866056	
97	Badaber	4	7828	873884	
98	Badaber	5	11545	885429	1
99	Badaber	6	15031	900460	
100	Haryana	1	7235	907695	
101	Haryana	2	5437	913132	
102	K/Garhi	1	9788	922920	
103	K/Garhi	2	8356	931276	
104	K/Garhi	3	5036	936312	
105	K/Garhi	4	13394	949706	
106	K/Garhi	5	10337	960043	1
107	K/Garhi	6	9383	969426	

The main recommendations arising from the survey include:-

-to set up a major initiative to promote the value and use of ORT amongst parents and health staff,

-to target interventions to prevent and treat diarrhoea particularly at the <1 year age group,

-to strengthen the promotion of the prime messages for diarrhoea especially to increase food and fluids during the diarrhoea episode, and to give only breast milk during the first 4 months of life,

-to strengthen the education and training of health staff in diarrhoea management,

-to formulate and implement a standard policy for NWFP on treatment of diarrhoea in the BHU and other health facilities, and prevention and management of diarrhoea in the home, including whether or not to discontinue promotion of SSS.

S.NO.	CAMPS		POPULATION	COMMULATIVE POP.	CLUSTER NO
108	Kababian	1	9604	979030	
109	Kababian	2	6806	985836	
110	Kababian	3	7252	993088	
111	Michani		17601	1010689	
112	Nasir Bagh	1	10050	1020739	
113	Nasir Bagh	2	10596	1031335	
114	Nasir Bagh	3	5487	1036822	1
115	Nasir Bagh	4	7312	1044134	
116	Nasir Bagh	5	8646	1052780	
117	Nasir Bagh	6	4949	1057729	
118	Munda	1	9074	1066803	
119	Munda	2	9860	1076663	
120	Munda	3	9972	1086635	
121	Munda	4	11096	1097731	
122	Munda	5	13549	1111280	
123	Munda	6	5269	1116549	1
124	Kababian	4	8539	1125088	
125	Mera Kichori	1	9452	1134540	
126	Mera Kichori	2	11254	1145794	
127	Mera Kichori	3	10845	1156639	
128	Shamshatoo	1	8208	1164847	
129	Shamshatoo	2	10860	1175707	
130	Shamshatoo	3	6613	1182320	
131	Utmanzai		4978	1187298	
132	Naguman		4081	1191379	
133	Hajizai		5384	1196763	1
134	Khazana		9273	1206036	
135	Aza Khel	1	5429	1211465	
136	Aza Khel	2	8586	1220051	
137	Aza Khel	3	6042	1226093	
138	Dagbesud	1	6007	1232100	
139	Dagbesud	2	5582	1237682	
140	Jalozai	1	8055	1245737	
141	Jalozai	2	7345	1253082	
142	Jalozai	3	7852	1260934	
143	Jalozai	4	9691	1270625	
144	Jalozai	5	10725	1281350	1
145	Jalozai	6	911	1282261	
146	Jalozai	7	7374	1289635	
147	Hawai	1	8357	1297992	
148	Hawai	2	10073	1308065	
149	Hawai	3	92973	1401038	1
150	Hawai	4	7001	1408039	
151	Hawai	5	5381	1413420	
152	Hawai	6	7161	1420581	
153	Hawai	7	8191	1428772	
154	Koga	1	7079	1435851	1
155	Koga	2	7179	1443030	
156	Bachina		5104	1448134	
157	Damadola	1	9167	1457301	
158	Damadola	2	8536	1465837	
159	Damadola	3	7704	1473541	
160	Damadola	4	8769	1482310	

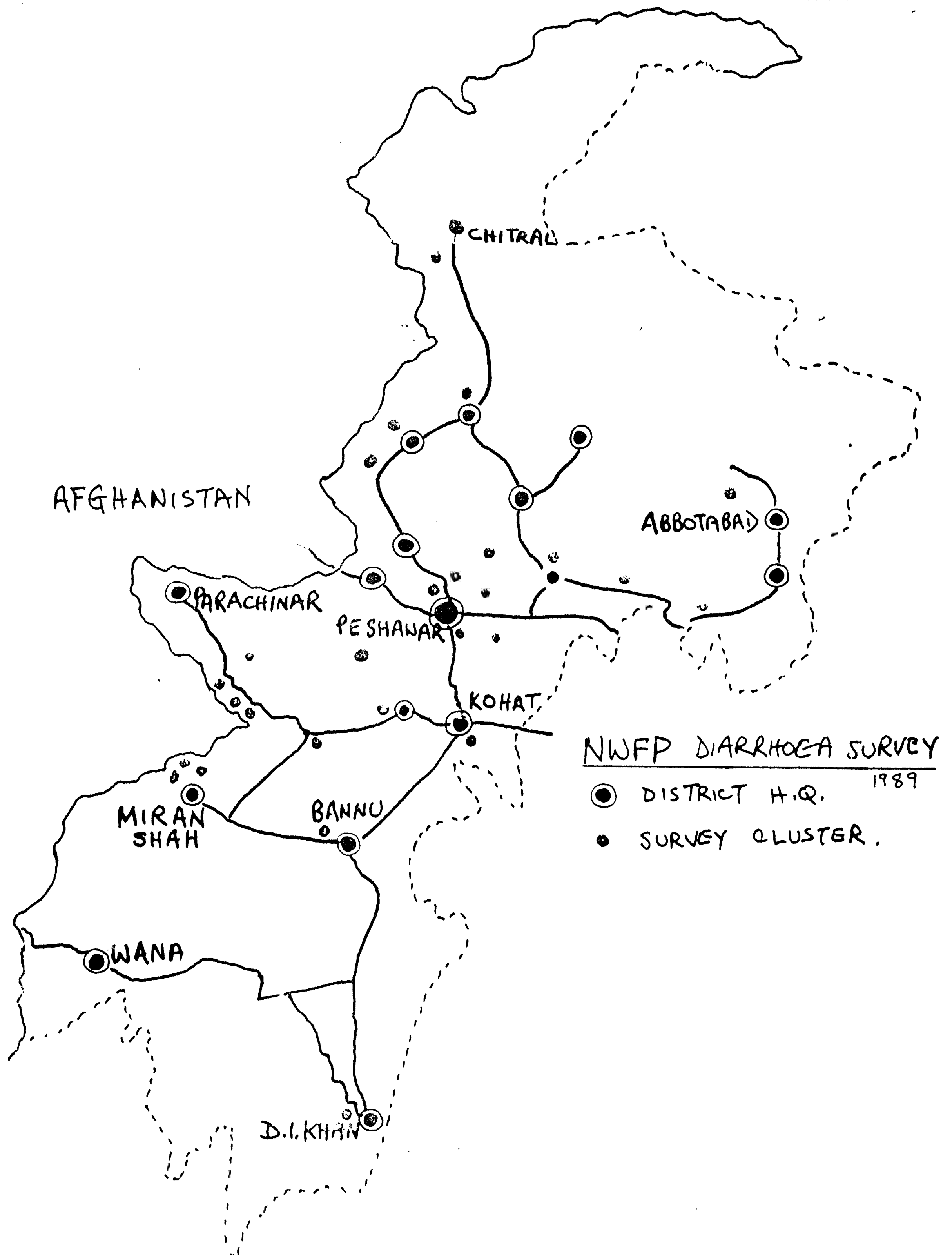
S.NO.	CAMPS		POPULATION	COMMULATIVE POP.	CLUSTER NO
161	Damadola	5	9022	1491332	
162	Damadola	6	5510	1496842	
163	Damadola	7	7381	1504223	
164	Jahangirabad		9514	1513737	1
165	Kirala		8802	1522539	
166	Khazana		8068	1530607	
167	Nawagai		12573	1543180	
168	Nawababad		5349	1548529	
169	Raghagan		6987	1555516	
170	Rashakai	1	6686	1562202	
171	Rashakai	2	6318	1568520	
172	S.Jehanabad	1	14330	1582850	
173	S.Jehanabad	2	8002	1590852	1
174	S.Jehanabad	3	7121	1597973	
175	Sultan		7280	1605253	
176	Umari		9477	1614730	
177	Yousafabad	1	9326	1624056	
178	Yousafabad	2	5933	1629989	
179	Yousafabad	3	4323	1634312	
180	Zoor Banda		6657	1640969	
181	Ahmadishama		11317	1652286	
182	Arawali		5864	1658150	
183	Asgharo	1	7401	1665551	
184	Asgharo	2	9367	1674918	1
185	Asgharo	3	10158	1685076	
186	Asgharo	4	6413	1691489	
187	Bushera		12905	1704394	
188	Bassu		7348	1711742	
189	Chapari		10042	1721784	
190	Durrani		7583	1729367	
191	Gerzandani		10907	1740274	
192	Gawaki		11313	1751587	1
193	Guzgarhi		6039	1757626	
194	M.Kot		8183	1765809	
195	Matasanger		14395	1780204	
196	New Bagzai	1	17383	1797587	
197	New Bagzai	2	13711	1811298	
198	New Bagzai	3	9628	1820926	
199	Old Bagzai		15549	1836475	1
200	Parachinar	1	8649	1845124	
201	Parachinar	2	12544	1857668	
202	Saraghurga		11299	1868967	
203	Shashu		13924	1882891	
204	Shabak		8864	1891755	
205	Satin	1	11296	1903051	
206	Satin	2	5660	1908711	1
207	Tindo	1	10340	1919051	
208	Tindo	2	7074	1926125	
209	Khapyanga	1	10035	1936160	
210	Khapyanga	2	9906	1946066	
211	Khapyanga	3	17009	1963075	
212	Khapyanga	4	9078	1972153	

S.NO.	CAMPS		POPULATION	COMMULATIVE POP.	CLUSTER NO.
213	Zamo		15166	1987319	1
214	Bechalor		1500	1988819	
215	Zangal		22317	2011136	
216	Palai	1	16464	2027600	
217	Palai	2	13155	2040755	
218	Yakka Ghund	1	7745	2048500	
219	Yakka Ghund	2	8185	2056685	
220	Bodziart		4041	2060726	
221	Bandgider		6593	2067319	1
222	Batti	1	6555	2073874	
223	Batti	2	5034	2078908	
224	Darsamandi		7453	2086361	
225	Darpakhel	1	10266	2096627	
226	Darpakhel	2	10944	2107571	
227	Bawgoundi		4109	2111680	
228	Godiwala		4062	2115742	
229	Hamzani	1	5743	2121485	
230	Hamzani	2	5603	2127088	
231	M.Factory		7178	2134266	
232	Mirali		7011	2141277	
233	Mohdkhel	1	4764	2146041	1
234	Mohdkhel	2	5335	2151376	
235	Naridug		12398	2163774	
236	Q.Khel		8727	2172501	
237	Seeri		4319	2176820	
238	Spinwame		8441	2185261	
239	Sherkhel		78286	2263547	1
240	Stanye		13463	2277010	
241	Tabbi		12966	2289976	
242	Miranshah		10288	2300264	
243	R.T.V(Ghijlo)	1	8059	2308323	1
244	R.T.V(Ghiljo)	2	5312	2313635	
245	Azam Warsak		9093	2322728	
246	Baghar		9234	2331962	
247	Sarakanda		7981	2339943	
248	Zari Nour	1	8744	2348687	
249	Zari Nour	2	10627	2359314	
250	Zermilana		10849	2370163	

Cluster 1	0	9514	9514
Cluster 2	9514	79005	88519
Cluster 3	88519	79005	167524
Cluster 4	167524	79005	246529
Cluster 5	246529	79005	325534
Cluster 6	325534	79005	404539
Cluster 7	404539	79005	483544
Cluster 8	483544	79005	562549
Cluster 9	562549	79005	641554
Cluster 10	641554	79005	720559
Cluster 11	720559	79005	799564
Cluster 12	799564	79005	878569
Cluster 13	878569	79005	957574
Cluster 14	957574	79005	1036579
Cluster 15	1036579	79005	1115584
Cluster 16	1115584	79005	1194589
Cluster 17	1194589	79005	1273594
Cluster 18	1273594	79005	1352599
Cluster 19	1352599	79005	1431604
Cluster 20	1431604	79005	1510609
Cluster 21	1510609	79005	1589614
Cluster 22	1589614	79005	1668619
Cluster 23	1668619	79005	1747624
Cluster 24	1747624	79005	1826629
Cluster 25	1826629	79005	1905634
Cluster 26	1905634	79005	1984639
Cluster 27	1984639	79005	2063644
Cluster 28	2063644	79005	2142649
Cluster 29	2142649	79005	2221654
Cluster 30	2221654	79005	2300659

Random start = 9514

Sampling interval = 79005



CHITRAL
AFGHANISTAN
ABBOTABAD
PARACHINAR
PESHAWAR
KOHAT
NWFP DIARRHOEA SURVEY
1989
DISTRICT H.Q.
SURVEY CLUSTER.
MIRAN SHAH
BANNU
WANA
D.I.KHAN

DIARRHOEA SURVEY
Interviewers Manual.

1. PURPOSE OF SURVEY

This diarrhoea survey is to be conducted in NWFP in order to find out how often and how severely children under 5 years of age get diarrhoea, and how many children die from diarrhoea; this information will help show how important diarrhoea is in causing ill-health and death amongst refugee children, compared with other diseases.

The survey will also find out what methods are presently being used by parents to treat diarrhoea, and whether they are being carried out correctly. This will help us plan the best methods of treatment for children with diarrhoea, in the camps and during repatriation.

2. SAMPLE SIZE

30 clusters of children under 5 years old will be randomly selected from amongst all refugee camps in NWFP. You will be told which camps have been selected. Each cluster will contain approximately 190 children, making a total sample size of 5700 children. (Thus, assuming children under 5 years form 17% of the population, each cluster will contain at least approximately 1118 total population).

3. SAMPLING METHOD

3.1 How to divide the camp into sections.

On arrival at the camp go to the RV administration to inform them about the survey, to obtain guides and to look at their maps. This will give you a rough idea of the size and shape of the camp. Then go to a local high-point (nearby hill, roof of house etc) to observe the camp yourself. Decide whether the camp is a compact one or is more spread out with scattered groups of dwellings. Divide the camp into several sections (usually about 6 to 8) by making a sketch map of the camp which shows each section with its own number. Details are given in appendix 1 (page). This appendix also tells you how to work out how many children are required from each section. If you cannot find enough eligible children for a cluster from one camp, go to the next closest camp and repeat the process of dividing into sections and continue until you have 190 children. Write name of camp, cluster number and date on each sketch map and hand it in with the completed questionnaires.

3.2 How to find the survey starting point in each section.

Go to the approximate geographical center of each section and use the disc to find the direction in which you will find the first household. The disc has 10 numbered directions from 0 to 9. Put it flat on the ground (or get someone to hold it flat) and choose a number between 0 & 9 using random number tables (point blindly at the table with a pencil and use the number pointed). Walk in the chosen direction towards the periphery of the section counting the number of compounds along this line. Choose a random number (using the random number tables) between 1 and the total number of compounds you counted. Start at the compound of this number, to conduct the 1st interview.

3.3 How to continue the survey.

When you have completed the 1st compound, go to the next closest compound, that is the one whose front door or entrance is closest to the 1st compound. Proceed in a similar manner for subsequent compounds, but always keep within the limits of your section. Continue until you have the number of children under 5 years required for that section (whether or not they have diarrhoea).

Important. Never go to a compound that has not been chosen by the random selection process described in section 3.

4. CONDUCTING THE INTERVIEWS.

4.1 On entering the compound, introduce yourself or have the RVA guide introduce you. Find out how many households there are in the compound (a household is defined as all those people who eat from the same cooking pot). If there is more than 1 household, a different interviewer should go to each household.

4.2 In each household, ask to speak with an adult member of that household, preferably one who cares for the young children who live there.

4.3 Briefly explain the purpose of the survey and mention the relevant authorities who have approved the survey. (e.g. "we are conducting this survey to find out how many children get diarrhoea and what is the best method to treat it. The survey has been approved by the BHU, the RVA and UNHCR.")

4.4 If some children or even a whole household are absent, record this on the form. Try to get information about absent children - return later if there is no responsible person who can give this information.

4.5 To begin with, ask the questions exactly as they are written (or with any minor working changes that were agreed on in training). You must ask the questions exactly as all the other surveyors do, so that the results can be combined and interpreted meaningfully.

4.6 Ask the questions in a respectful manner, and do not imply that some answers are "better" than others. A mother will deny that her child has had diarrhoea if she believes that the surveyor associates diarrhoea with being a poor parent or having an unclean household. She will deny using a particular remedy if she thinks that the surveyor will criticize her.

4.7 When an answer is unclear, ask the question again or ask it in a slightly different way, but be careful not to change the meaning or "lead" the respondent into a particular response.

For example, suppose you have just asked the mother, "What fluids was the child given to drink for the treatment of diarrhoea?" The mother replies, "I gave her a "special drink." Do not ask a leading question such as "Do you mean that you used ORS?" Instead ask an open question like "What kind of special drink?" or "What was in the drink?".

4.8 If an answer seems inconsistent with previous information given by the respondent, or you have some reason to disbelieve an answer, try to discover the truth by asking another question or asking a question slightly differently. However, do not be overly persistent. A respondent may change her answer just because persistent questioning suggests that the surveyor is dissatisfied with that answer.

5 HOW TO COMPLETE THE QUESTIONNAIRE.

Top of the page. Do not forget to put in the Province, District, Name of camp, Cluster Number, section number (from the section map) and date. Also put cluster number and section number at the top of subsequent pages.

Q.1 Compound Number. Put here the number of the compound given on the sketch map. If no number was given, number compounds consecutively (1,2,3,4,5,6,......etc). Put the correct number at the top of every column on every page. For every child that has diarrhoea in a particular compound, there should be one column completed, and that compound number should be at the top of each of these columns and at the top of each page. When you begin a new section in the camp, use a new questionnaire form and start the compound numbering process again (1,2,3,4,5,6,....etc).

Q.2 Serial number of household. A household is defined as those people, usually members of 1 family, who all eat from the same cooking pot. Most compounds contain more than 1 household. Number the households consecutively in each compound as you visit them and write that number here and also at the top of each page. This is to make sure that 2 households in a compound never have the same number. The same household number should be at the top of each column that is completed for each child from that household who has diarrhoea. When you start a new section, begin a new questionnaire.

Q.3. Enter all children under 5 years old that live in the household, even if they are not the children of the respondent, and even if they are temporarily absent from the compound during the interview.

Q.4 Do not ask the parents directly how many children are absent, but observe the number that are present and record the absentees from that.

Q.5 & Q.6 Write in these 2 boxes the number of children living in the compound who are under 1 year old and between 1 year and under 5 years old.

For Q3 - Q7 complete only 1 column for each household. If more than 1 child in the household has diarrhoea, columns in this block (Q3 - Q7) will be blank above the answers to Q8 onwards for 2nd and subsequent children.

In question 3, 5 6 and 8 make sure that children who have almost reach their 1st or their 5th birthday are counted, but not those who have reached it or gone past it. Always try to find a child's age as accurately as possible. If the mother is uncertain use several methods to cross-check the result e.g. check age or date of birth on EPI cards or Road to Health or Clinic Cards, compare child's age with siblings, relate to local events.

Q.8 - Q.24. Complete one column for every child under 5 years old with diarrhoea starting in the past 2 weeks (including the day of the survey.)

Q.7 For each child under 5 years individually, ask whether or not the child had diarrhoea starting in the past 2 weeks (=14 days). Use the term for diarrhoea agreed on during training. Do not define diarrhoea any further unless the respondent asks or you are in doubt about her answer. If diarrhoea must be defined, it is 3 or more abnormally loose stools per day, with or without blood. If none had diarrhoea, write '0'.

Q.8 For each child with diarrhoea starting in the past 2 weeks, indicate in appropriate column the age of the child by writing the age in years in the appropriate box.

Q.9, 10. The answer to these questions will help those who analyze the survey results to determine the average duration of a diarrhoea episode. In Q.9 put Y for Yes, N for No. In Q.10 if the diarrhoea started today, record 0; if yesterday, 1; if the day before yesterday, 2; etc.

Q.11. Breast feeding refers to exclusive breast-feeding or breast feeding along with other fluids and food.

Q.13 Ask if the child has started eating solid foods. If not write N/A to indicate that this question is not applicable, and go on to the next question. For children who normally eat solid foods, record if the foods were stopped (S), or the amount decreased (D), unchanged (U), or increased (I) during diarrhoea.

Q.14. Record if fluids were stopped (S), or the amount decreased (D), unchanged (U), or increased (I), during diarrhoea. This question refers to any fluids normally given to the child (e.g. breast milk, water, tea, juice) as well as to fluids which may have been specially prepared for treatment of diarrhoea. The point is to determine if the overall volume of fluids given was changed.

Q.15. Ask this as an open question - in other words do not suggest the possible answers in your question. More than one fluid maybe mentioned by the respondent (e.g. ORS, homemade sugar-salt solution, a traditional local fluid remedy or others). Indicate all of the fluids given to the child.

Definition of "fluid" is greater than 1 cup of liquid. There is also a place to record any other fluids specially prepared for treatment of diarrhoea. Do not, however, include medicine such as Kaolin and pectin mixture or liquid antibiotic preparations.

Q.16 If the answer to Q10 includes ORS or sugar salt solution, record the way the respondent remembers hearing about the fluid(s). If CHW gave the information, record MHW for male health worker, FHW for female health worker or TBA, G for group leader or malik, B for BHU, FAM for family, M for medical store/bazar, P for private practitioner, H for hospital, O for other (specify), DK for don't know.

Q.17 If the answer to Q15 included ORS, record where the ORS packets were obtained. Use the same abbreviations as Q16.

Q.18 If a traditional local fluid was given for the diarrhoea, record here all the ingredients of it.

Q.19 Intravenous fluids are given from a plastic bag or bottle through a tube into a needle fixed into a vein, usually in the hand, arm, foot, or scalp. They may take 1 or more hours to give.

Q.21 Answer "Y" for "yes" if the child was given any medicine (other than rehydrating fluid) for the treatment of diarrhoea.

Q.22 If the answer to Q21 is "yes", write the type of medicine or medicines, traditional (tr), tablets (ta), capsules (ca), injection (i), syrups (s), drops (d), don't know (dk). Do not specify the name of the medicine. If any other type of medicine was given, specify it.

Q.23 This Question is intended to find out where severely dehydrated children are taken for treatment. (abbreviations at end).

2. INTRODUCTION

Diarrhoeal disease is one of the leading causes of mortality and morbidity in young children globally, and this is also true for Pakistan and for the Afghan Refugee Health Programme (A.R.H.P). Surveys conducted by Centers for Disease Control (CDC), Atlanta in North West Frontier Province in 1985 & 1986 showed that diarrhoea was present in the week before death in 39% and 34% respectively of deaths in children under 5 years of age (References 1,2). It was also the commonest disease-associated mortality factor in children of this age.

Current policy in NWFP is to promote the use of ORSS (oral rehydration salts solution) for treatment of diarrhoea in the 201 Basic Health Units (BHUs) and Sub Health Units (SHUs) in the province. Health staff prescribe ORS packets and instruct mothers how to prepare ORSS. For prevention of diarrhoea or early management of dehydration in the home, the male community health worker (CHW) programme has promoted the home teaspoon (or cup and spoon) method for sugar-salt solution (SSS). This programme commenced in 1984 and since then to the present 169 CHSs have been trained to teach the method to almost 4000 CHWs. Nearly 2000 FHWs have also been trained in primary health care but they have not so far been involved in the promotion of ORT (oral rehydration therapy).

In 1989 UNHCR decided to carry out a large-scale community-based survey of diarrhoeal mortality and morbidity according to WHO methodology in order to evaluate and improve control of diarrhoeal disease (CDD) activities. The survey would also gather data on treatment practices in the home and BHU and knowledge of ORT (ORSS &/or SSS) in the home and the effectiveness with which this was taught. This data had not been obtained in previous surveys. Information from the survey should also assist in formulating policy for management of diarrhoeal disease in NWFP and act as a baseline against which future changes in CDD activities could be measured.

3. METHODOLOGY

3.1 SURVEY DESIGN

The survey was designed according to the WHO household survey manual published in 1986 (ref.3). This is a descriptive survey in which a randomly selected sample of mothers or guardians of children under 5 years of age is interviewed to determine morbidity, mortality, and treatment practices for diarrhoeal disease in these children. Minor changes were made to the methodology, mostly in the questionnaire, for it to be appropriate to local circumstances.

Q.24 Here record whether or not any children under 5 years old died during the 12 months preceding the date of the survey. Use a well-known event that occurred 12 month ago to define the 12 months period.

The one-year recall period of the date of death may be difficult to define. The Supervisor will provide you with a list of events that occurred about one year ago (for example, a religious festival, a crop harvest). You may ask about the timing of deaths in relation to one of these events.

Include any live-born child who was less than 5 years old at the time of death. Ask Q26 - Q29 for each of these deaths, recording answers for each death in a separate column. Make sure the correct household serial number is at the top of the column at the top of the page.

For personal or cultural reasons, people may not want to talk about the death of a child. In such cases, you will need to be particularly sensitive and respectful in the way you ask questions. You may need to say something like, "I know it is difficult to talk about, but has any child of this house under age 5 died since..... It is important that we know so that we can improve health care and prevent more deaths." Of course, you will need to agree on the way to ask the question with the team leader.

Babies that died within days or weeks after birth may be forgotten about or thought by the respondent to be unimportant for the survey, especially since you are asking about older children as well. Q30 will help you identify these deaths.

Q 26. Write the age in years in appropriate box to show age of child when he/she died.

Q.27 Ask about each sign or symptom individually. Record all signs and symptoms described by the respondent, writing any additional symptoms mentioned (e.g. cough) in "other" space. Use the locally accepted words for measles rash.

Q.28 Write the respondent's opinion. This is mainly to discover causes of death which are obviously unrelated to diarrhoea (e.g. accidental death).

Q.29 A death is considered "diarrhoea-associated" if diarrhoea occurred in the week before death, and there was no obvious cause of death unrelated to diarrhoea (e.g. an accident). The surveyor should record his opinion.

Q.30 This question is a check on the completeness of answers to Q3 and Q24. If the baby is alive and still living in the household, make sure it was counted in Q3. If the baby has died, make sure it was included in Q25 and that Q26-Q29 were asked about the death. Stillbirth means that the baby was born dead, that is it did not move or cry after birth.

Q.31 Put "yes" or "no" (Y or N) according to whether respondent has ever heard of ORS.

Q.32 You should have a packet of ORS to show the respondent for this question. Unless she has said that she has used ORS begin this question by asking if she knows how to prepare ORS solution. If she does not know, answer "I" for Incorrect and go to the next question.

Otherwise ask the respondent to describe how to prepare ORS solution. Do not give her any prompting. Make sure she knows to use the whole packet, the correct volume of clean water (boiled water is not necessary), listen for these specific points and judge whether they have been described correctly (c) or incorrectly (I).

Q.33 If answer to Q32 was correct, record "N/A" for Not applicable here. If the answer was incorrect, put "x" in the box(es) opposite what things respondent did not know about preparing ORS. If she has heard of ORS but knows nothing about how to prepare it, put "x" by "whole method".

Q.34 If answer to Q32 was correct, ask respondent to demonstrate the preparation of ORS using the ORS packet provided by you. Write "C" or "I" according to whether demonstration was correct or incorrect. Check that the whole packet was used. Make sure the correct volume of water was used for the packet and the container in which the ORS was mixed was large enough for this volume (use your measuring jug to check the water volume and container; if the volume was wrong show the mother the correct volume). Water should be clean but does not need to have been boiled.

Q.35 If the answer to Q34 was correct put "N/A" for not applicable. If it was incorrect mark "x" in the box(es) opposite what was done incorrectly.

Q.36 Put "Y" for yes" or "N" for "no" according to whether mother has ever heard of 'sugar-salt solution' or 'rehydration drink' or similar wording for a home-made rehydration solution. If the answer is "No" go to Q41.

Q.37 Unless the mother has previously said (in Q15) that she has used sugar-salt solution, begin this question by asking if she knows how to prepare sugar-salt solution. If she does know ask her to describe her method. She can choose any of the metnods given or another method, but do not prompt her. Put ✓ against method chosen; specify if it is another method (use back of the form if you need more room to specify the details). If she does not know how to prepare any method, answer "DK" for don't know and go to Q41.

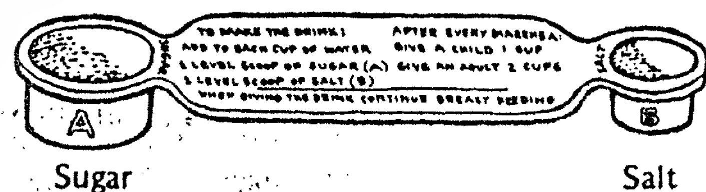
Details of the methods given are:-

1. PINCH AND SCOOP. A scoop of sugar in the palm of the hand, and a 3finger pinch of coarse salt dissolved in a medium-sized glass of clean water (about 1/3 of a liter), (or 4 scoops suger and 2 pinches salt in 1 litre water).

2. HOME TEASPOON. Using the normal size teaspoon that is found in the home, she should describe adding 8 level teaspoons of sugar and 1 level teaspoon of salt in 1 liter of clean water; or 1-2 teaspoons sugar and the tip of 1 teaspoon of salt into 1 medium sized glass of clean water.

3. TALC PLASTIC SPOON. This is a special plastic spoon (see picture) with a large scoop for sugar at one end and a small scoop for salt at the other end. Instructions are embossed on the plastic handle. One scoop of sugar (large scoop) and 1 scoop of salt (small scoop) should be dissolved in 1 glass or cup of clean water.

Listen for the specific points described for the method chosen and then judge whether the description is correct (c) or incorrect (I). If she described a method whose details are not given here, use your own judgement to decide if her description was correct.



Q.38 If the answer to Q37 was correct, put "N/A" for not applicable here. If the answer was incorrect put "x" in the box opposite what the respondent did not know about preparing sugar-salt solution. If she has heard of it but knows nothing about how to prepare it, put "x" by "whole method."

Q.39 If the answer to Q37 was correct, ask respondent to demonstrate how to prepare her method of sugar-salt solution. Write "c" or "I" according to whether demonstration was done correctly or incorrectly. Use the notes for Q37 to check that the method chosen is demonstrated correctly. Make sure the correct volume of fluid is used (check with the measuring jug) and that she gets the ingredients to dissolve completely.

Q.40 If the demonstration was correct, record nothing here. If it was incorrect mark "x" to show what was done incorrectly.

Q.41 Ask about each ingredient and utensil individually. Ask first: do you have it in the house now? If not, ask: could you get it today if you needed it? If the answer to either of these questions is yes, record that the ingredient/utensil is available. If the answer to both questions is no, record that it is not available.

Q.42 Look back at Q41. If all the necessary ingredients and utensils were available, record "yes".

Q.43 Ask if the respondent has a packet of ORS in the household. If there is, ask to see it, and write name of it here.

Q.44 Look at the packet instructions to find the volume of water required to mix with the packet.

Q.45 Use the abbreviations to show where the ORS packet was obtained.

6. CHECKING PROCEDURES.

After completing the questionnaire columns for each household check down all the columns to make sure all questions have been asked and the replies recorded correctly. Make sure the cluster number and section number are recorded at the head of each page and the compound number and household serial number is at the top of the columns on the 1st page. The household serial number should also be at the top of the columns on the 2nd and subsequent pages of the questionnaire.

When you have completed each questionnaire, don't forget to sign and print your name at the end.

ABBREVIATIONS.

YES = Y; NO = N; DK = DON'T KNOW.
Y/N/DK = YES OR NO OR DON'T KNOW.
Male Community Health worker = MHW
Female Community Health Worker = FHW
Group leader/Malik = G
BHU = B
Medical Store/Bazar = M
Private medical practitioner = P
Hospital = H
Other = O
Not applicable = N/A
Nowhere = N/W

NOTE FOR SUPERVISOR.

1. Please check every questionnair at end of day.
   Make sure columns are collected labelled with correct compound and household number.
   Ensure all questions are completed and that they are consistent with each other.
   Ensure every questionnaire is signed.

2. Number every questionnaire consecutively (continue from the previous day's last number).

3. Check number of children < 5 years seen that day.

4. Enter totals on summary sheets.

5. Keep all maps and calculation sheets used.

DIARRHOEA SURVEY

ANNEX 6

PROVINCE______ DISTRICT______ CLUSTER NO.______ DATE______

CAMP______ SECTION NUMBER______

								TOTAL
Q1	Compound Number							
Q2	Serial number of household in compound							

FOR Q3 - Q7 COMPLETE 1 COLUMN FOR EACH HOUSEHOLD. IF A HOUSEHOLD HAS MORE THAN 1 CHILD WITH DIARRHOEA LEAVE APPROPRAITE COLUMN IN THIS BLOCK (Q3 - Q7) BLANK.

Q3	How many children <5years live in this household? If none, enter 0 and go to Q 24.							
Q4	Record how many of these children were absent during survey interview.							
Q5	How many are aged <1 yr?							
Q6	How many are aged 1-4yrs?							
Q7	By asking about each child <5yrs individually in the household, find how many had diarrhoea starting in past 2 weeks. Record that number. If none enter 0 & go to Q24.							

FOR Q8-Q24 COMPLETE ONE COLUMN FOR EACH CASE OF DIARRHOEA STARTING IN THE PAST 2 WEEKS.

Q8	Age of child with diarrhoea	< 1 yr							
		1-4 yrs							
Q9	Does the child have diarrhoea today? (yes/no)								Y N
Q10	How many days ago did the diarrhoea start?								
Q11	Was the child breast feeding before the diarrhoea started?								Y N
Q12	If YES, was breast feeding continued during the diarrhoea?								Y N
Q13	During the diarrhoea did you change the amount of solid foods given? Record: stopped, decreased, unchanged or increase (S/D/U/I).								S D U I
Q14	During the diarrhoea did you change the amount of fluid given? Record: stopped, decreased, unchanged or increase (S/D/U/I).								S D U I

CLUSTER NUMBER ________ SECTION NUMBER ________

										Total
	Compound Number									
	Serial number of household									
Q15	What fluid was the child given to drink for the treatment of diarrhoea? [do not say more than this] (Y/N/DK)	ORS								OR
		Sugar/salt solution								SS
		Traditional local fluid								T
		Other (specify)								O
Q16	If ORS or sugar salt solution where/how did you hear about it/them	ORS								
		Sugar salt solution								
Q17	If ORS was used: Where did you get the ORS?	MHW * FHW Group leader/ Malik BHU Medical st./ Bazar Private Practitioner Other (specify								MHW FHW G B M P O
Q18	If a traditional local fluid was given for diarrhoea record all the ingredients.									
Q19	Did the child receive intravenous fluid for diarrhoea during the last 2 weeks? (Y/N/DK)									Y N
Q20	If yes, where was the child given intravenous fluids?	BHU: B * Hospital: H Med.store/ Bazar : M other(specify) O Private Pracatitioner: P								B H M O P
Q21	Did the child receive any other medicine for the treatment of diarrhoea? (Y/N/DK)									Y N

* See Interviewer's Manual P.9. for full list of abbreviations.

CLUSTER NUMBER ______________ SECTION NUMBER ______________

									TOTAL
	Compound number								
	Serial number of household								
Q22	If YES, what medicine: capsules, traditional (tr) tablets (ta) injection (i) syrups (s), drops (d) (do not specify), Other (o) specify.								tr ta i s d o
Q23	If the child became seriously ill with diarrhoea where would you take him/her for treatment?								MHW FHW G B M PH O
Q24	Has any child of this house <5 years old died since: _______ (12 months)? If YES, answer Qs 27-29. If NO, go to Q 30.								Y N DK
Q25	If YES, how many died in this house hold?								
	FOR EACH CHILD THAT DIED COMPLETE ONE COLUMN UNDER THE APPROPRIATE HOUSE NUMBER.								
Q26	How old was child when he/she died?	< 1 yrs							
		1-4 yrs							
Q27	Were any of the following signs or symptoms present in the week before death? (Yes or No) (Don't know)	Fever?							F
		Measles Rash?							M
		Diarrhoea?							D
		Shortness of breath?							SB
		Convulsions							C
		Other (specify)							O
Q28	In the opinion of the respondent, what was the cause of death?								
Q29	In the opinion of the surveyor, was the death "diarrhoea-associated"? YES/NO								Y N DK

DIARRHOEA SURVEY SAMPLING 1989

CLUSTER	CAMP	DISTRICT	DATES VISITED
1	GHAZI	NR TURBELA	13-14 FEB.
2	PANIAN 7	HARIPUR	21-22 FEB.
3	BAKKAKHEL	BANU	6-8 MARCH
4	SHIDI	CHITRAL	16-17 MAY
5	TOOR	DIR	6-7 JUNE
6	PUSHAPUL	DIK	13-14 MARCH
7	JERMA	KOHAT	20-21 MARCH
8	KAHI 2	HANGU	26-27 MARCH
9	THALL 1	THALL	22-25 MARCH
10	NEBLORE	MANSEHRA	27-28 FEB.
11	FAZAL 1	MARDAN	28 MARCH-6 APRIL
12	BADABER 5	PESH	23-25 MAY
13	KACHAGARHI 5	PESH	31 JAN - 6 FEB.
14	NASIRBAGH 3	PESH	6-8 FEB.
15	MUNDA 6	PESH	17-19 APRIL
16	HAJIZAI	CHARSADA	9-11 APRIL
17	JALOZAI 5	PESH	26-30 APRIL
18	HAWAI	AKORA KHATAK	2-4 MAY
19	KOGA	SWAT	3-4 APRIL
20	JAHANGIRABAD	BAJAUR	7-8 JUNE
21	SHAJAHANABAD 2	BAJAUR	27-28 JUNE
22	ASGHARO 2	KURRAM	14-15 JUNE
23	GAWAKI	KURRAM	12-13 JUNE
24	OLD BAGZAI	KURRAM	21-22 JUNE
25	SATIN 2	KURRAM	30-31 MAY
26	ZAMO	KURRAM	4-5 JULY
27	MOHAMAD KHEL 1	NW	10-12 JULY
28	SHERKHEL	NW	NOT VISITED.
29	GHILJO 1	ORAKZAI	23-24 MAY
30	BANDIGAR	NW	NOT VISITED.

NW = NORTH WAZIRISTAN
DIK = D.I. KHAN.
PESH = PESHAWAR.

4.2 CALCULATE LIMITS OF PRECISION

The rates obtained in a survey are only estimates. You stated the desired limits of precision for these estimates when you determined the sample size for the survey (see Section B, 1.4). After the survey it is necessary to calculate the actual limits of precision obtained.

Formula for Calculating Limits of Precision

For each rate calculated from the survey results, calculate the actual limits of precision using the following formula, in which:

L = the number which will define the limits of precision (± L)

C = the number of clusters

P = the rate for which you are calculating limits of precision

y_i = the numerator found in each cluster (for example, the number of cases, cases treated, deaths, or diarrhoea-associated deaths, depending on the rate in question)

x_i = the denominator found in each cluster (for example, the number of children or cases, depending on the rate in question)

When you have solved for L, you will be able to say with reasonable confidence that the actual rate lies between P - L and P + L.

$$L = 2\sqrt{\frac{C\,(\Sigma y_i^2 - 2P\Sigma x_i y_i + P^2\Sigma x_i^2)}{(C-1)\qquad(\Sigma x_i)^2}}$$

The sign Σ means "the total of." Thus, Σx_i means the total of the denominators found for each cluster, that is, the denominator of the rate for the survey as a whole.

Be careful to note where the parentheses fall in this equation:

Σy_i^2 means to square each y_i individually and then add the results together.

$(\Sigma x_i)^2$ means to add the x_i's and then square the total.

3.2 SAMPLING

The sampling frame was all the 2.2 million refugees residing in all districts of North West Frontier Province at the time of the survey. Sample size was determined according to the expected diarrhoea-associated mortality rate which was estimated to be 35 per 1000, and the minimum reduction in mortality required to be detected by the time of the next follow-up survey which was set at 40% (limits of precision +/- 20%); the sample size required fo these estimates was approximately 5500 children (see Annex 1). Since diarrhoea-associated mortality is always a rarer event than diarrhoea morbidity or treatment rates, this sample size should provide more than adequate limits of precision for these rates.

The basic sample consisted of 30 clusters or sample sites selected from the sampling frame using a 2 stage, random start, skip-interval cluster sampling method. In the first stage, camps where clusters were to be selected were chosen by probability proportionate to size, i.e. the larger the camp the more likely it would be chosen. (details of method in Annex 2). The sampling interval and the camps chosen are listed in annex 3 and mapped in Annex 4. Camp populations used were those currently published by the Commissioner for Afghan Refugees for NWFP.

In the second stage, each camp chosen for a particular cluster was mapped and divided into about 6 to 8 sections, and compounds were randomly selected within each section using a numbered disc and random number tables (for details see section 3 of annex 5:- Diarrhoea Survey Interviewers Manual). All children under 5 years of age living in each compound visited were eligible for inclusion in the cluster. Surveyors were instructed to pay particular attention to measuring the child's age accurately (categories: <5yrs which comprised <1 year & 1-4 years) by obtaining information from parents, various health cards, comparison with siblings, and using local events calendars. Compounds were visited in the cluster until at least 190 children had been included. Where compounds contained more than 1 household, each household was interviewed separately. A household was defined as all persons who normally have a common kitchen and eat principal meals together. (this definition is taken from the UNRISD survey (Ref:5) which found the average household size to be 8.5, compared with the "official" family size of 6.3 using the Government of Pakistan definition).

3.3 QUESTIONNAIRE.

Surveyors gathered data by interviewing mothers or other guardians of eligible children and recording results on a questionnaire.

ESTIMATING ANNUAL INCIDENCE RATES TAKING INTO ACCOUNT SEASONAL VARIATIONS

From the survey you can estimate the 2-week diarrhoea incidence rate. However, for reporting and programme planning (e.g., projection of ORS needs), it is more useful to have an estimate of the number of episodes of diarrhoea per child per year.

To estimate the annual incidence (per child) of diarrhoea, it may not be appropriate to multiply the 2-week incidence rate by 26, as this would not take into account seasonal variations in diarrhoea incidence. To account for seasonal variations, use the following formula:

2-week diarrhoea incidence rate ÷ Proportion of annual diarrhoea episodes expected to have occurred during 2 week recall period of the survey

The proportion of annual diarrhoea episodes that occurred during this 2 week period could be called a "seasonality adjustment factor." To estimate this factor, do the following steps:

1. Using the most recent and complete available data from the disease surveillance system or from a selection of health facilities, prepare a table of reported diarrhoea cases by month (or by week) for a whole year. These data should be drawn from the geographic area in which the survey was conducted. An average for each month of several previous years' data may be used or, if available, data for the current year.

EXAMPLE

New Diarrhoea Cases Seen At A Selection Of Health Facilities, By Month

Month	Diarrhoeal Disease Cases Seen
January	730
February	715
March	862
April	903
May	1 120
June	1 450
July	1 807
August	1 923
September	1 689
October	1 283
November	904
December	820
Total	14 206

2. Calculate the proportion of the annual total of cases that occurred during a 2-week period corresponding approximately to the time of the survey.

EXAMPLE

Let us assume that the morbidity and mortality survey described in this manual was carried out during April. The proportion of the annual total cases occurring in any 2-week period in April would be approximately half of the April cases divided by the annual total:

$$\frac{903}{2} \div 14\ 206 = 0.032$$

0.032 is the seasonality adjustment factor to put in the formula for estimating annual incidence.

In the example survey in this manual, the 2-week incidence rate was estimated to be 0.089 (i.e., 8.9% of children were estimated to have had diarrhoea starting in the 2-week period). To estimate the annual incidence, we divide:

$$\frac{0.089}{0.032} = 2.78 \text{ cases per child per year}$$

(Note that if the 2-week incidence rate had simply been multiplied by 26, the estimated number of cases per child per year would have been 0.089 X 26 = 2.31).

Use of this method of adjusting diarrhoea incidence estimates for seasonal variation is based on several assumptions, including the following:

- That the seasonal variation in diarrhoea cases seen at health facilities is related to seasonal variations in incidence, not to problems of access to health facilities (for example, monsoon rains making roads impassable).
- That the seasonal variation pattern used in steps 1 and 2 is similar to that which occurs in the year in which the survey is conducted.

If these assumptions appear not to be valid, it will be necessary to make further adjustments to the estimated rate according to the particular situation. If no data are available, make the best possible adjustments to the rate using your knowledge of seasonality.

NOTE: Each cluster was calculated separately according to the month in which it was performed.

Estimating the Average Duration of a Diarrhoea Episode from Survey Data

To estimate the average duration of a diarrhoea episode (d) from the survey, surveyors could ask respondents when each episode of diarrhoea started and finished. This would be extremely difficult for respondents to remember. To get an approximate estimate of duration, surveyors can ask instead, for children with diarrhoea today, "How many days ago did the diarrhoea start?"* (They record 0 if it started today, 1 for yesterday, 2 for the day before yesterday, etc.)

Some of the episodes of diarrhoea today will have just started; some will be ending; and some will be in the middle of the episode. On average, they will be in the middle. Therefore:

d = the average response to the above question X 2

* This question is included in OPTIONAL QUESTIONS C listed in Section F. If the question is not included in your survey, simply make an estimate of d between 3 and 7 days.

Ingredients of traditional local fluids.

	Ingredient	Frequency
1	Ligusticum	60
2	aniseed	49
3	Gutti	24
4	barthang	12
5	Gur	10
6	Sugar	6
7	Aspaghool seeds	4
8	acacia fistula	4
9	green tea	3
10	Cardomum	3
11	amaltas	2
12	Milk	2
13	alam	2
14	ginger	1
15	mint leaves	1
16	Mustard (wild)	1
17	Areca	1
18	Orange Peel	1
19	tea	1
20	Sunjoot	1
21	Sparkai	1
22	Badyan	1
23	gongyano seeds	1
24	jushanda	1
25	Doda (poppy)	1
26	Khaksheer	(see mustard-wild)
27	Chamberkhyl	(see barthang)

	Name of ORS Packet (in order of frequency)	Volume of water reqd.	Number of ORS Packets found	Proportion of all packets.
1	Orasal-F	1 litre	183	40.2%
2	Rehydrate	1 litre	65	14.3%
3	Rehydro	1 litre	32	7.0%
4	Fakma pharm	1 litre	27	5.9%
5	Hydrosol	1 litre	27	5.9%
6	nimkol	0.5 litre	14	3.1%
7	Oral rehydration salt	1 litre	11	2.4%
8	Wezep Netherlands	1 litre	9	2.0%
9	Rehydro salt	1 litre	8	1.8%
10	ORS	1 litre	7	1.5%
11	Rehydrate ORS	1 litre	7	1.5%
12	Oral Rehydration	1 litre	6	1.3%
13	Neolyte ORS	1 litre	4	0.9%
14	Orasal	1 litre	4	0.9%
15	Soma Labs	1 litre	4	0.9%
16	Orasal ORS	1 litre	3	0.7%
17	ORS Star labs	1 litre	3	0.7%
18	Rehyde	1 litre	3	0.7%
19	Rehydro ORS	1 litre	3	0.7%
20	R-salt(fakma)	1 litre	3	0.7%
21	Fakma	1 litre	2	0.4%
22	Fakma ORS	1 litre	2	0.4%
23	IDA Germany	1 litre	2	0.4%
24	ORS Sels Italy	Not recorded	2	0.4%
25	Rehydro salt soma	1 litre	2	0.4%
26	Sais (Italy)	1 litre	2	0.4%
27	Sales Italy	1 litre	2	0.4%
28	Star labs	1 litre	2	0.4%
29	nimkol	1 litre	1	0.2%
30	Oral rehydration Italy	1 litre	1	0.2%
31	Oral wezep Netherland	1 litre	1	0.2%
32	ORS Fakma Lahore	1 litre	1	0.2%
33	ORS Lahore	1 litre	1	0.2%
34	ORS Netherlands	1 litre	1	0.2%
35	ORS Rehydrate	1 litre	1	0.2%
36	Paeditol	1 litre	1	0.2%
37	Para A Hidratacao	1 litre	1	0.2%
38	Para-A Hidratac 90 (Italy)	1 litre	1	0.2%
39	Rehyde Orange	1 litre	1	0.2%
40	Rehyde ORS	1 litre	1	0.2%
41	Rehyde Wilshire	1 litre	1	0.2%
42	Rehydration Salt	1 litre	1	0.2%
43	Rehydro ORS Soma	1 litre	1	0.2%
44	Soma ORS	Not recorded	1	0.2%

5.7 Control of diarrhoeal diseases

The prime messages are:

- Diarrhoea can kill children by draining too much liquid from the body.

- Give a child with diarrhoea extra fluids frequently as soon as it begins and as long as it continues.

- When a child has diarrhoea, it is important to continue breastfeeding.

- A child with diarrhoea needs food. Bottle feeding and soothers are bad and lead to diarrhoea.

- Trained help is needed if diarrhoea is more serious than usual.

- After diarrhoea stops, a child needs extra food every day for at least a week.

- Medicines other than ORS should not be used for diarrhoea, except on medical advice.

- The following can help prevent diarrhoea: breast feeding, using latrines, keeping food and water clean and covered, washing hands before touching food, washing hands after using latrine.

ANNEX 14

ABBREVIATIONS

ARHP: Afghan Refugee Health Programme

BHU: Basic Health Unit.

CDC: Centers for Disease Control, Atlanta, Georgia, USA.

CDD: control of diarrhoeal diseases.

CHS: Community Health Supervisor.

CHW: Community Health Worker (Male).

FHW: Female Community Health Worker.

NWFP: North-West Frontier Province.

ORS: Oral rehydration salts.

ORSS: Oral rehydration salts solution.

ORT: Oral rehydration therapy (ORSS &/or SSS).

PDH: Project Directorate (Health).

SSS: Sugar-salt solution.

TLF: Traditional local fluid.

UNHCR: United Nations High Commissioner for Refugees.

UNICEF: United Nations Children's Fund.

U5MR: Under 5 years of age mortality rate.

WHO: World Health Organization.

The questionnaire (annex 6) contained sections to record children present under 5 years of age, their diarrhoea episodes starting during the preceding 2 weeks, feeding and fluid intake during the diarrhoea episode, treatment with oral rehydration therapy (ORT), traditional fluids or other medicines, and the place of treatment. Diarrhoea was defined as 3 or more abnormally loose stools per day, with or without blood. Children dying under 5 years of age in each household during the preceding 12 months were recorded together with associated symptoms during the week before death. The number of live births occurring in the household in the preceding 12 months was also recorded.

Each mother, whether or not her child had diarrhoea, was asked in detail about her knowledge of ORT (where there was more than 1 respondent in a household, e.g. more than 1 wife/mother, the reply to questions for this part of the questionnaire on treatment practices was recorded as the consensus view, usually given by the most senior respondent present). If the respondent had heard of ORS or SSS, she was asked to describe its preparation; if correct she was then asked to demonstrate this with her own utensils, (the surveyor supplied an ORS packet if necessary). The method the mother chose to mix SSS was recorded; (the surveyor could record 1 of 3 methods thought to be in use in NWFP, or record details of another method - see annex 5, interviewers manual, page 8, Q.47). Surveyors recorded what was incorrectly described or demonstrated and checked the volume of water used. A volume between 975-1025 ml was accepted as correct and the actual volume used was not recorded. The latest WHO household survey manual (ref.3, not available when this survey was conducted) recommends that the volume used be recorded and that a volume of 950-1200 ml be accepted as correct. Surveyors also recorded availability in each household of necessary materials and equipment.

Detailed explanation of each question is given in the interviewers manual (Annex 5; section 5)

3.4 SURVEY TEAM

The UNHCR Survey Team consisted of a supervisor and 3 health information assistants. All were Pakistani ladies from this province and fluent in Pashto, Urdu, and English. They all had extensive experience of the conduct of health surveys throughout NWFP.

3.5 SURVEY PROCEDURE.

The team received an initial training for 1 week in the conduct of the survey and administration of the questionnaire. A small pilot survey was conducted in the second week in a camp in the Peshawar district not selected for a cluster; this included field testing of 57 questionnaires which enabled necessary

refinements to be made. After each cluster, questionnaires were checked by the survey supervisor.

3.6 ANALYSIS

The questionnaire format was set up in a computer spread-sheet programme (Lotus 1-2-3) and data from the questionnaires entered in it. The programme performed internal range and consistency checks and calculated rates and limits of precision (further details of programme from author, on request).

The limits of precision or confidence interval, which were calculated for all rates and proportions found in the survey, give a range within which there is a 95% chance that the true value lies. The formula for calculating the limits of precision is given in annex 8. The values of the limits of precision are given in brackets after each rate or proportion in the results (section 4, and table 1).

4. RESULTS

4.1 SAMPLE POPULATION

The team administered 676 questionnaires in 28 clusters between 31st January and 12 July 1989. 2 clusters in North Waziristan Agency were not visited because of security problems. (see annex 7 for list of clusters visited, with dates). Surveyors visited 3332 households and obtained information on a total of 5883 children less than 5 years of age, including 5755 who were alive at the time of interview and 128 who had died in the preceding 12 months. Of those still living 1365 (23.7%) were under 1 year of age and 4388 (76.2%) were 1-4 years of age (in 2 children age category was not recorded). Of those that died, 100 (78.1%) were under 1 year of age at death, and 28 (21.9%) were 1-4 years of age. A total of 1375 live births had occurred in these households in the preceding 12 months.

4.2 DIARRHOEA MORBIDITY

A history of diarrhoea starting in the 2 weeks prior to the survey was given for 21.0% of children under 5 years of age (1209 children) limits of precision: 18.4 - 23.6% (see table 1 for comprehensive list of results). When these children were divided by age, the rate for those <1 year of age (24.8%) was higher than that for ages 1-4 years (19.8%), difference not significant.

The annual diarrhoea incidence for children <1 year (5.5 episodes per child per year) was also higher than in children

aged 1-4 years (4.5 episodes per child per year). The method of calculating the number of episodes of diarrhoea per child per year (annual diarrhoea incidence) which takes into account seasonal variation is given in annex 9. Seasonal changes in diarrhoea incidence were taken from monthly returns of diarrhoea cases seen at Voluntary Agency (VOLAG) and Project Directorate of Health (PDH) BHUs, compiled by the PDH office (figure 1).

The average duration of a diarrhoea episode was 9.2 days (see annex 10 for method of calculation). This figure depends on the mother's accuracy of recall and may not be reliable; it also excludes all diarrhoea episodes that began more than 14 days before the interview.

16.5% of children had diarrhoea on the day of the survey. This figure may be inaccurate because an exact period of 24 hours was not specified in the question asked (annex 6, question 9).

4.3 MORTALITY RATES. (Table 1, section 3).

The overall all causes <5 year mortality rate expressed according to the total number of children under 5 years sampled was 22 deaths per thousand (limits of precision 18 -26). The same rate expressed according to the number of live births (as is done in UNICEF's "State of the World's Children" Ref.4) gives a figure of 93 per 1000 (limits of precision 75-111). The overall under 1 year mortality rate was 12 times as high as that for children aged 1-4 years. The Infant mortality rate was 73 per 1000 live births (limits of precision 60-86). The figure for this rate is identical to the under 1 year mortality rate; the former should be lower because the denominator (live births) would be expected to be appreciably higher than the number of children aged <1 year. In this survey the number of live births in the previous 12 months was 1375, total children <1 year was 1365; number of deaths <1 year was 100. Some surveyors occasionally failed to record live births (annex 6,question 30) so that the total number of live births was underestimated.

The diarrhoea associated mortality rate showed that almost 40 percent of all deaths in children under 5 years of age were associated with diarrhoea. This rate for children less than 1 year was considerably and significantly higher than for children aged 1-4 years. However the proportion of deaths due to diarrhoea is higher in children aged 1-4 years (difference not significant). In other words, there are more diarrhoea deaths at <1 year but diarrhoea may be a more important cause of death at 1-4 years of age. Three quarters of all diarrhoea associated deaths occurred in children <1 year of age.

4.4 TREATMENT PRACTICES.

4.4.1 DIARRHOEA CASE MANAGEMENT.

56.5% of children with diarrhoea received increased or unchanged food intake during the diarrhoea episode, and in 30.4% food was stopped or decreased; in 158 cases (13.1%) information about feeding was not available or not recorded. Fluids were increased in 54.4% of cases but in 29.5% they remained unchanged, and in 7.6% they were decreased or stopped; information was missing in 102 cases (8.4%). Only 6 cases received intravenous fluids.

Slightly more than half the cases were breast feeding at the onset of diarrhoea and nearly all (98.8%) continued during the episode. 7 cases discontinued breast feeding during the diarrhoea episode.

One fifth of children with diarrhoea were given oral rehydration solution, ORS, (table 1, section 4.4), whereas only 3.1% received sugar-salt solution (SSS). Almost 10% of children received a traditional local fluid (TLF).

The most frequent source by far for the ORS packet was the BHU (70.3% of children given ORS), followed by Private Doctor (14.8%), and bazaar or medical store (6.3%), but only 1.2% (5 cases) obtained their ORS packet from the CHW and none from the FHW. There was a similar order and frequency for source of knowledge of ORS. (table 1, section 4.6), and likewise for source of knowledge of SSS. However, 9 respondents of cases (23.7% of children given SSS) obtained knowledge of SSS, and 5 obtained knowledge of ORS (2.0% of children given ORS) from CHWs. No knowledge of ORS or SSS was obtained from FHWs.

Almost three quarters of cases received some other medicines (besides ORT or TLF), the majority of which were syrups, although approximately 10% were given injections, (actual drugs given were not recorded). The most popular places to take a seriously ill (i.e. seriously dehydrated) child for treatment were a Private Doctor (69%) and BHU (41%). Only 3.8% would be taken to hospital and 2.3% would not be taken anywhere.

Traditional local fluids contained a wide variety of ingredients (see annex 1 for list and frequency of ingredients). The most popular mixtures were Gutti (Ligusticum, aniseed (fennel) and gur (molasses) in water), cassia fistula (also called amaltas or barthong) with cardomum and ligusticum, aniseed with wild mustard (Khaksheer) and with or without ligusticum, asphagol (a seed that swells up in water) with aniseed or milk and sugar, green tea with or without cardomum, and in 1 case an infusion of mint leaves and orange peel in water.

4.4.2 KNOWLEDGE OF ORAL REHYDRATION SALTS SOLUTION (ORSS) PREPARATION (table 1, section 5)

Questions on knowledge of ORS and SSS and availability of materials (table 1, sections 5-7) were asked of all respondents, not just those whose children had diarrhoea.

Nearly all households (95.4%) had heard of ORSS but only 19% described the preparation correctly, the commonest mistake being the use of an incorrect volume of water - 71.7% of all incorrect households (this figure may be an overestimate because too strict limits for acceptable volumes may have been used, see section 3.3). The next most common mistake was using an incorrect amount of ORS (40.8%).

Mothers that described ORSS preparation correctly were asked to demonstrate preparation using their own utensils. If they didnot possess an ORS packet, one was supplied (or replaced) by the survey team. Only 13.5% of all households demonstrated ORSS preparation correctly (that is, 71.2% (65.5 - 76.9) of households that described ORSS preparation correctly). All incorrect respondents got the volume of water wrong.

4.4.3 KNOWLEDGE OF SUGAR SALT SOLUTION (SSS) PREPARATION (table 1, section 6)

Considerably fewer households had heard of SSS (23.2%) than ORS. The commonest method in use was the household or home teaspoon method (70.3% of households that heard of SSS) followed by pinch and scoop method (20.5%) (see annex 5, page 8, Q37 for definitions). Only 9 households were recorded as using the TALC plastic spoon and 12 used another method (unspecified). Note that percentages in section 10.2 do not total 100% because some questionnaires failed to record the method in use.

Only 5.3% of all households described SSS preparation correctly (that is, 22.7% of households that heard of SSS). The commonest mistake was with the amount of sugar (this result may be an over-estimate - see section 5.4) but substantial numbers also mistook the correct amount of salt and volume of water. 61 households failed to describe correct use of clean water for SSS, but only 16 failed for ORS (the number mistaking the amount of salt may be underestimated since this line of the questionnaire (Question 38) was inadvertently not printed in some questionnaires).

Almost 80% of households that described SSS preparation correctly also demonstrated it correctly, but this number was only 4.2% of all households (table 1, line 6.4.1). Again the commonest mistake was demonstrating an incorrect volume of water (90.3% of incorrect households), followed by incorrect amount of salt (29.0%). It should be noted that, because of the smaller

DIARRHOEA MORBIDITY, MORTALITY

and

TREATMENT PRACTICES

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in North-West Frontier Province, Pakistan.

January – July, 1989.

by

Dr Andrew W. Smith, Health Coordinator, UNHCR, Peshawar.

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UNHCR Survey on Diarrhoea Morbidity, Mortality & Treatment, 1989.

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